PERCEPTIONS OF THE LEARNING ENVIRONMENT BY MEDICAL STUDENTS AT A NEW MEDICAL SCHOOL IN NIGERIA

BY

Adetunji Obadeji

Research assignment submitted in partial fulfilment of the requirements for the degree of Masters of Philosophy in Health Professions Education at the Faculty of Medicine and Health Sciences, Stellenbosch University

Supervisor: Dr A Louw
Prof Ian Couper
Stellenbosch University

April 2019

DECLARATION

By submitting this dissertation electronically, I declare that the entirety of the work contained therein is my own original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Date: November 2018

Adetunji Obadeji

ACKNOWLEDGEMENTS

My sincere gratitude goes to the clinical students of the Faculty of Clinical Sciences at the Ekiti State University Ado-Ekiti, who took time off their busy schedules to participate in this study, more importantly Mr Waheed Azeez and Mr Akintunde Abe who assisted in mobilising the participants. Equally, I would also like to use this opportunity to express my sincere appreciation to my colleagues at work for their support during this study.

To my dear family, whose support has made this journey a reality, I appreciate you all. My wife Tolulope, thank you for your patience and understanding and to my children; Tumilara, Erinayo and Mojirire, thank you.

And to all my teachers at the Centre for Health Professions Education, University of Stellenbosch, I thank you all for making this journey a reality.

My sincere appreciation goes to my supervisors; Prof. Couper and Dr. Louw, for your support and guidance through this scholarly journey.

Finally, I would like thank my God and the Lord, Jesus Christ, for the grace and strength that I was granted all through this journey. To Him alone is all the glory.

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

i. AMA: American Medical Association

ii. CT: Computerised Tomography

iii. DREEM: Dundee Ready Education Environment Measure

iv. ESUMS: Ekiti State University Medical School

v. EKSU: Ekiti State University

vi. PHEEM: Hospital Educational Environment Measure

vii. IMC: Integrated Medical Curriculum

viii. LEQ: Learning Environment Questionnaire

ix. LBL: Lectured-Based Learning

x. PBL: Problem-Based Learning

xi. MRI: Magnetic Resonance Imaging

xii. MDCN: Medical and Dental Council of Nigeria

xiii. MSLES: Medical School Learning Environment Survey

xiv. STEM: Surgical Theatre Educational Environment Measure

ABSTRACT

There is an increasing interest and concern about the role of the learning environment in undergraduate medical education. The learning environment as experienced by students has been described as one of the most important factors in determining the success of any medical curriculum. Not only does it form the basis for effective learning, it also determines the extent to which learning objectives or outcomes will be achieved. It is a determinant of students' satisfaction and achievement. Assessment of the learning environment provides an essential approach for evaluating the quality of the medical curriculum and training programmes by identifying the strengths and the weaknesses of the curriculum and the priority areas for improvement; thereby ensuring high quality medical education.

The Ekiti State University Medical School (ESUMS) is in its early formative years with various challenges, reforms, and modifications. An assessment of how students perceive the learning environment will not only provide insight into the various challenges, but also identify the strength of the learning environment that can be enhanced in order to maximize learning and ensure learning outcomes are achieved. With this understanding, this study aimed to understand how medical students in this new medical school perceive their learning environment.

With the assumption that learning is socially constructed, a qualitative approach to inquiry using focus group interviews was adopted to assess how students perceived the learning environment. An interview guide based on the five subscales of the Dundee Ready Education Environment Measure (DREEM) i.e. students' perceptions of learning, teaching, academic self-perceptions, atmosphere, and social self-perceptions, alongside other areas of interest was employed to navigate discussions. Four data sets were obtained from the transcriptions of four focus group interviews. Thematic analysis was conducted by the researcher with the aim of identifying various themes from the data sets.

Although globally the learning environment was rated below average, findings of the study also identified some strengths of the learning environment namely, *adequacy of classes, laboratories and seminar rooms, the good students-teachers relationship that exist, the relatively high teacher-student ratio with greater opportunity for students' engagements in patients' care*. Nevertheless, key weaknesses were also identified, namely *inadequate teaching aids and essential hospital equipment to facilitate teaching and learning, the absence of opportunities for financial aids or scholarships,* and *a negatively perceived social environment and an irregular supply of electricity*. Again, a few of the

participants also highlighted the issue relating to bullying or the use of derogatory language by some of their lecturers. These were believed to impact negatively on teaching and learning.

In addition, the participants described their ideal medical school as one with good physical structures with basic facilities for comfort, teaching and learning, recreation, with opportunity for inter-school competitions, financial aids and scholarship and besides one must be aware of the date of graduation at the time admission, this, they believe will motivate students to want to learn. On the average, participants rated the current circumstances at the university as 30-40% of their expected ideal due to inadequacy or absence of some of the factors highlighted above.

The identified key strengths and weaknesses, as well as challenges confronting teaching and learning in this learning environment provide the foundation from which educational managers can improve the learning environment and thereby, enhance the learning outcomes.

OPSOMMING

Daar is toenemende belangstelling en kommer oor die rol wat die leeromgewing in voorgraadse mediese studente se opleiding speel. Studente beskryf die belewing van die leeromgewing as een van die belangrikste faktore wat die sukses van enige mediese kurrikulum bepaal. Dit vorm die basis van effektiewe leer en bepaal ook die mate waarin leerdoelstellings en leeruitkomste bereik word. Die belewing van leeromgewing speel 'n groot rol in studente se tevredenheid en prestasie. Om die kwaliteit van die kurrikula en ander leerprogramme te bepaal, kan die assessering van die leeromgewing 'n groot bydrae lewer tot die vasstelling van sterk- en swakpunte daarvan, asook ander prioriteitsareas waar verbetering kan plaasvind.

Die Ekiti State University Medical School (ESUMS) is tans in sy vroeë vormingsjare. 'n Verskeidenheid uitdagings en ander aspekte van hervorming en aanpassings staar die instelling in die gesig. Deur die leeromgewing te assesseer kan insig bekom word oor hoe die leeromgewing verbeter kan word sodat die uitkomste wat die program ten doel het, bereik kan word. Teen hierdie agtergrond was die studie daarop gemik om te verstaan hoe studente van hierdie nuwe mediese skool hulle leeromgewing ervaar.

'n Kwalitatiewe navorsingsbenadering is gevolg waar gebruik gemaak is van fokusgroep-onderhoude om te bepaal hoe studente die leeromgewing ervaar. Die onderhoudsgids is gebasseer op die vyf DREEM subskale naamlik, studente se persepsies van leer, onderrig, akademiese selfpersepsies, die leeratmosfeer en sosiale selfpersepsies. Die vrae vir die onderhoudsgids is ontwikkel om besprekings te inisieer. Vier stelle data is verkry uit die transkripsies van die vier fokusgroeponderhoude. Die data is tematies geanaliseer met die doel om verskillende temas in die vier stelle data te identifiseer.

Oorhoofs is die leeromgewing as ondergemiddeld deur die studente beoordeel. Die bevindinge het wel sekere sterkpunte van die leeromgewing geïdentifiseer, naamlik dié van voldoende klasse, laboratoriums en seminaarkamers, die goeie studente-dosente verhouding, die relatiewe hoë student-dosent ratio wat tot beter geleenthede vir betrokkenheid van studente by pasiëntsorg tot gevolg het. Terselfdertyd is daar ook kern swakpunte geïdentifiseer wat wissel van onvoldoende onderrighulpmiddels, noodsaaklike hospitaaltoerusting en fasiliteite vir onderrig en leer, die afwesigheid van geleenthede vir finansïele steun en studiebeurse, die negatiewe belewing van die sosiale omgewing tot die wisselvallige beskikbaarheid van elektrisitiet.

Weereens het sommige van die deelnemers ook aandag gegee aan die kwessie rakende afknouery of die gebruik van afwykende taal deur sommige van hul dosente. Hierdie faktore het waarskynlik ‘n negatiewe impak op leer en onderrig.

Daarbenewens het die deelnemers hul ideale mediese skool beskryf as een met goeie fisiese strukture met basiese geriewe vir troos, onderrig en leer, ontspanning, met geleentheid vir interskoolkompetisies, finansiële hulpmiddels en studiebeurse. Verder moet 'n mens bewus wees van die datum van gradeplegtigheid by die toelatingsdatum, dit glo hulle sal studente motiveer om te wil leer. Op gemiddelde het die deelnemers die huidige omstandighede by die universiteit as 30-40% van hul verwagte ideaal as gevolg van onvoldoende of afwesigheid van sommige van die faktore wat hierbo gemerk is, gegradeer.

Die geïdentifiseerde sleutel sterkpunte en swakpunte asook die uitdagings wat leer en onderrig in hierdie leeromgewing konfronteer, verskaf ‘n fondasie vir onderrigleiers om op te reageer en sodoende die leeromgewing en dus ook leeruitkomste te verbeter.

CHAPTER ONE

INTRODUCTION

1.1. Background

An educational environment as experienced by students is a strong determinant of student satisfaction and achievement. It is an important factor in determining the extent to which any educational programme will achieve its learning objectives or outcomes. It is a major determinant of the success of any educational programme (Lizzio, Wilson & Simons, 2002).

In recent years, there has been an increasing interest in and concern with the role of the learning environment in undergraduate medical education. This has led to the development of many instruments to measure the medical learning environment. Bassaw et al (2003) note that the learning environment is one of the most important factors in determining the success of any medical curriculum and according to Genn, (2001), it forms the basis for effective learning. An inquiry into the learning environment provides an essential approach for evaluating the quality of the medical curriculum and training programmes by identifying the strengths and the weaknesses of the curriculum and the priority areas for improvement (Genn, 2001; Isba & Boor, 2018; Soemantri, Herrera, & Riquelme, 2010) and thereby ensuring high quality medical education (Soemantri, Herrera & Riquelme, 2010).

Genn (2001) described the educational environment as a manifestation of the curriculum. The educational culture or climate of an institution predicts the extent to which the curriculum will be implemented or the extent to which the curriculum objectives will be achieved. Wherever and whenever students gather or wherever teaching and learning take place, a learning environment exists. The learning environment includes various factors which all contribute to effective teaching and learning and forms the background within which the curriculum is implemented. In addition, it determines medical student's behavior (Soemantri, Herrera & Riquelme, 2010).

Although there is little agreement on what constitutes the learning environment, it incorporates the physical surroundings in which learning takes place, such as the lecture theatres, seminar rooms, laboratories, clinics, or the ward, alongside a broader and less tangible educational climate. The educational environment in its broader sense consists of three components: the institutional culture, the curriculum (both formal and informal), and the educational climate (Genn, 2001). Jamaiah (2008), on the other hand, reasons that the educational environment can be divided into three parts: the

physical environment (facilities, comfort, safety, food and accommodation), the emotional climate (security, positive methods and reinforcement), and the intellectual climate (learning with patients, teaching and learning approaches, the use of evidence-based and up-to-date knowledge and skills)

Looking at these various components of the learning environment, defining it remains a daunting task. Nevertheless, some authors have attempted to define what the learning environment encompasses. The American Medical Association (AMA) defines the learning environment as "a social system that includes the learner (including the external relationships and other factors affecting the learner), the individuals with whom the learner interacts, the setting(s) and purpose(s) of the interaction, and the formal and informal rules/policies/norms governing the interaction" (AMA, 2008 pp.4). Genn (2001) on the other hand, defined the learning environment or educational climate of an institution as the environment experienced or perceived by students and teachers. These definitions emphasize the relevance of the learner as well as those factors that influence learning at the 'heart' of the learning environment. In this study, the learning environment is seen as the physical (facilities for teaching and learning, adequacy and comfortability of such, safety), social (opportunity for relaxation, student-student interaction as well students' interaction with member of staff), the intellectual (opportunity to enhance learning) climate that directly and indirectly influences the curriculum.

Learning is a process that is difficult to comprehend and according to Entwistle & Trait (1995), it is influenced by the way in which a student goes about learning or studying and the conduciveness of the learning environment. This emphasizes the relevance of the study of the educational environment in the pursuit of educational objectives as well as outcomes. The learning environment significantly impacts on learners' learning outcomes and their ability to developed appropriate professional attributes, including the quality of patient care (General Medical Council, 2013). The learning environment is believed to influence students' behaviour and academic performance (Mayya & Roff, 2004), hence, students who perceive the learning environment as being supportive may work harder and perform better. The understanding of the role that the learning environment plays in the success of medical education (particularly in ensuring students' satisfaction and achievement) has stimulated my interest in understanding how students perceive the learning environment at the Ekiti State University Medical School (ESUMS).

The ESUMS is still in its early formative years with various challenges, reforms, and modifications. Although the University was established about 36 years ago, the medical school was established only eight years ago. The medical school offers a six-year medical education curriculum, with two and half

years in the pre-clinical and three and half years in the clinical classes. There are various challenges confronting teaching and learning, ranging from inadequate infrastructure, challenges with accreditation, and incessant disruptions of the academic calendar due to strikes by academic and non-academic staff as well as undue political interference. These challenges directly impact on the learning environment. An understanding of how students perceive the learning environment will provide an opportunity to evaluate the curriculum and identify areas of strengths and of weaknesses. An inquiry into how medical students at this institution perceive the learning environment could provide the faculty with valuable information and knowledge of how students perceive their learning environment and can be done to enhance such.

1.2. Rationale for the study

Despite challenges with medical education in Nigeria, and the established impact of the learning environment on learning outcomes, only a few studies (Anyaehi et al, 2011; Buhari et al., 2012; Okoye et al., 2017; Ogun, Nottidge, & Roff, 2018) have looked at how medical students in Nigeria perceive the learning environment. There are incessant disruptions of the academic calendar, particularly in relevant state institutions, inadequate infrastructure amidst poorly equipped classes and poorly remunerated teachers. These factors are likely to affect teaching and learning, students' perceptions of their learning environment and hence, negatively impact on the achievement of the desired learning outcomes.

The ESUMS, like most medical schools in the country, is faced with many challenges confronting teaching and learning. Currently, the medical school operates a traditional lecture-based curriculum where teaching is characterized by didactic lectures. There is a continuous review of policies aimed at improving the overall quality of teaching and learning amidst these challenges. According to Genn (2001), the assessment of students' perception of their learning environment provides an opportunity for quality improvement with innovation that will promote a medical school as a learning organization with attendant benefits. As a stakeholder, it is my desire to understand how medical students of this institution perceive their learning environment amidst these challenges. An understanding of students' perception of the learning environment at the ESUMS will provide insight into what the challenges are and how this information can be used to further improve the learning outcomes in this new medical school. Understanding specific features of the medical learning environment that contribute most significantly to the way students perceive the learning environment, both positive and negative, will provide an opportunity for appropriate interventions and improvement.

1.3. Research Question

How do medical students of the Ekiti State University (EKSU) perceive their learning environment?

1.4. Aims and Objectives of the Study

This study aimed to understand medical students' perception of the learning environment at a new Medical school in Nigeria during their clinical years.

The study objectives are:

i. To gain an understanding of the strengths and weaknesses of the learning environment at Ekiti State University medical school
ii. To identify the perceived challenges confronting teaching and learning in this medical school
iii. To understand the students' perspectives of what the ideal medical school learning environment should be.

With these objectives in mind, the next chapter provides information on the theoretical background and review of literature in the field of medical learning environment that relate to this current study.

1.5. Delineation and limitations

The focus of this study is to gain an understanding into how medical students at the ESUMS perceive their learning environment using a qualitative approach to data collection. Although the interview guide was developed based on DREEM inventory, the study is limited to the objectives of the study. The study focuses on the elements of the learning environment such as the physical, social and emotional climate as perceived by and of interest to the students. Issues relating to how students perceive teachers' knowledge and competency were not explored in this study due limited time available, and also to allow for a more in-depth exploration of those areas relating to this study's objectives. It is my contention that the qualitative approach adopted in this study, will generate better in-depth knowledge of the learning environment than the information gleaned from the more widely used quantitative inventories.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

The discussion on the theoretical perspectives that informed this study is organized into five sub-categories. The first part provides an overview of the literature relating to the learning environment in medical education. The second part identifies the relationship between the learning environment and different instructional strategies. The third section deals with the impact of the learning environment on the learning approach of students, the fourth deals various principles overarching learning in the medical learning environment, while the last section concludes the discussion by highlighting methods of assessing students' perceptions of the Medical Learning Environment with emphasis on studies in Nigeria.

2.2. Overview of literature relating to the learning environment

The various factors that influence learning can be grouped into either internal/individual factors or external factors. Internal factors include age, aptitude, motivation, attitudes, personality, cognitive styles and learning strategies a person adopts (Abucay, 2009; Abante et al., 2014). The external environment is the context in which learning occurs, such as the classroom environment, the level of noise in the environment, teaching and learning approaches, the teachers and the socio-political context in which learning occurs (Woolner & Hall, 2010; Fry et al., 2013).

The learning environment is key to ensuring effective teaching and learning in any academic programme. It impacts on students' satisfaction with the course, perceived well-being, aspirations as well as academic achievement (Pimparyon et al., 2000; Genn, 2001; Mayya & Roff, 2004). The educational environment incorporates different elements that influence teaching and learning. It encompasses physical, social, psychological, and cultural contexts in which students learn (Genn, 2001; Atapattu et al., 2015). According to Genn (2001), the learning environment represents the overall atmosphere or characteristics, the kinds of things that are rewarded, encouraged, emphasized, and those that influence students' behaviour and achievement.

The learning environment influences students' behaviour as well as academic performance, hence, ensuring a supportive environment may encourage students to work harder and perform better (Mayya & Roff, 2004; Wayne et al., 2013). Studies have shown that academically strong medical students rated

their learning environment significantly higher than did poorer performing ones (Hirsh, et al., 2012; Wayne et al, 2013). The high performing medical students on the other hand have been reported to have special characteristics compared to poor performing ones: they do not use social networking for prolonged periods of time; they are more motivated and enjoy their studies (Shawwa et al., 2015). There is also evidence suggesting that optimized medical school environments may enhance students' outcomes, and that learning environments associated with distress may be associated with a decline in student's empathy, professionalism, wellness as well as academic performance (Brazeau et al., 2010; Haglund et al., 2009; Artino et al., 2012; Hirsh et al., 2012).

Other factors influence the way students perceive their learning environment. Students with higher performance and those who are likely to recommend the school to others are more likely to have a better perception of their educational environment (Shochet et al., 2015). In the same vein, the experience of burnout, perceived psychological distress, or students' resilience levels may also influence the way students perceive their learning environment (Dyrbye et al., 2009; Howe et al., 2012; Tempski et al., 2015). There is no doubt that medical education is highly demanding, considering its scope. Students' ability to cope with this demand may affect the way they perceive their learning environment. According to Tempski et al (2015), medical students with higher resilience levels (i.e. those with the capacity to cope and recover quickly from difficulties) have a better quality of life and perception of their educational environment. Experiencing high workload has been found to be related to both exhaustion and lack of interest (Portoghese et al., 2014). Lack of interest on the other hand, correlates well with exhaustion and is negatively related to academic self-concept (Litmanen et al., 2014).

Students' well-being has been reported to be associated with dissatisfaction with the learning environment, high workload and insufficient feedback (Dyrbye et al., 2009; Salanova et al., 2010). Satisfaction with the learning environment and support from peers and senior doctors provide an opportunity for medical students to achieve a higher academic performance (Tyssen et al., 2005; Abdulghani et al., 2014) and protects them from stress and exhaustion (Dahlin et al., 2010). However, Dyrbye et al (2009) indicate a need for additional research in determining how to create a learning environment that enhances students' professional development and at the same time, minimizing problems with students' well-being.

As students continue through medical school, perceptions of the medical school learning environment worsens with a greater decline in perception scores as students' transition to the clinical learning environment (Dunham et al., 2017). At this time students reported a reduction in time for activities outside the school and informal student relationships.

2.3. The impact of Instructional strategies on the Learning Environment

In recent decades, several instructional strategies have been developed to improve the medical educational environment, and of prominence among these is the Problem-Based Learning (PBL) approach (Shan & Sun, 2006). The PBL curriculum according to Litmanen et al (2014) is an engaging but rather challenging environment, particularly for novice students. Because of this, PBL students are more likely to report greater exhaustion than their peers in the non-PBL groups at the beginning of their studies. In addition, students in a PBL-curriculum are likely to report higher levels of concern and uncertainties in their study behaviour, progress, aptitude and assessment of their studies (Litmanen et al., 2014) and received more feedback than students in the lecture-based curriculum (Kiessling et al., 2004).

Most of the studies looking at the students' perception of the learning environment by students with traditional lecture-based learning and the problem-based approach have reported mixed findings. In a comparative study by Zawawi & Elzubeir (2012), a medical school implementing a hybrid PBL curriculum and conventional school (school operating solely lecture-based learning), the perception of the learning environment was rated significantly higher by those experiencing the hybrid-PBL curriculum compared to those experiencing the conventional curriculum i.e. curriculum with predominantly lecture-based learning. As reported by Zawawi & Elzubeir (2012), students experiencing the hybrid PBL curriculum had significantly higher scores on Dundee Ready Education Environment Measure (DREEM) compared to those on convention lecture based learning (LBL) and more importantly, on students' perception of learning. This possibly suggests that PBL may be more efficient than LBL in improving the medical educational environment, particularly, students' perception of learning.

Similarly, in a meta-analysis by Qin, Wang & Floden (2016), the PBL method was superior to the LBL method in all subscales of DREEM. The pooled effect size showed that PBL was significantly superior to LBL in improving the medical educational environment as measured by the DREEM. This also supports most previous studies pertaining to DREEM scores and a PBL curriculum (Yang et al., 2010; Zawawi & Elzubeir, 2012). In the United State as well, PBL students were significantly more satisfied with their learning environment than students in the LBL (teaching and learning characterized by didactic teaching) groups (Lancaster et al., 1997; Lieberman et al., 1997). In contrast, De Oliveira Filho & Schonhorst (2005) in Brazil reported that DREEM scores did not differ between PBL courses and hybrid LBL courses with some elements PBL strategies.

In Kuwait on the other hand, a study looked at the students' perceptions of the educational environment in a medical school undergoing curricular transition from a traditional LBL to a PBL programme (Bouhaimed, Thalib & Doi, 2009), reported a poor perception of the learning environment, with deterioration in the Academic Self-Perception and improvement in the Perception of Atmosphere. Academic Self-Perception was noted to deteriorate because conventional strategies of learning were perceived as obsolete, whilst the perception of atmosphere improved because of the perceived increased relevance to their studies. This study highlighted the effect of a change in educational strategies or the curriculum, on the educational climate. Changes in teaching strategies bring to bear new factors that may lead students to develop a negative perception of their educational environment. The understanding of such factors can provide an opportunity for an improved educational outcome.

In Pakistan, Sajid, Rehman & Fatima (2013) studied the perception of students of the learning environment in an Integrated Medical Curriculum (a programme where clinical case discussions are incorporated into basic medical sciences). The educational environment as perceived by participants in this study was found to be more positive; the overall atmosphere of the college was adjudged comfortable and their social lives were rated as being above average. Nevertheless, opportunities for improvement were identified in this newly established medical college.

All these aforementioned learning environment factors impact on the curriculum, and point to the importance of instructional strategies for the modification of the learning environment. The curriculum influences the learning environment, and the environment serves as the catalyst for the curriculum. Therefore, for the curriculum to achieve its objectives there is a need to ensure a favourable or positive learning environment that will influence and drive the curriculum i.e. both the written and the hidden curriculum.

2.4 The impact of the learning environment on the learning approach of students

Although learning depends on several factors, learners' engagement is quite important. This, however, is affected by learners' motivation and perception of the relevance of the subject or the topic (Hutchinson, 2003). Learners' motivation on the other hand can be influenced by the preferred learning styles and the context in which learning is taking place (Hutchinson, 2003; Hoskins & Newstead, 2013).

The learning approach is the strategy a student adopts in the course of seeking knowledge. Entwistle et al (1999) note that this strategy is not inherent, but acquired, depending on the demand of the learning context or situation. In medical education, learning approaches might change over several years if

suitable efforts are made to promote such change (Chonkar et al., 2018). The understanding of the learning approaches adopted by medical students can assist educators to intervene and promote a more favourable learning environment that will enhance students' learning so as to ensure better learning outcomes (Chonkar et al., 2018). As noted by Belaineh (2017), students who perceived their learning environment as conducive to their learning, most probably will adopt a deep approach toward learning and will have better outcomes, while those who perceive their learning environment as non-conducive will most probably adopt a surface approach toward learning and have lower performance.

In a large, cross-disciplinary study with a sample of undergraduate students, Lizzio, Wilson & Simons (2002) found that students' perception of the learning environment influences their academic achievement, satisfaction, and development of key skills. This occurs either directly or through their approaches to study and their perception of workload. On the other hand, inappropriate assessment practices push students towards surface approaches. The perception of good teaching however, influences students to adopt more deep approaches to learning. Students' approaches to learning are influenced by the learning environment, and students' approach to learning greatly influences the outcome (Al-Qahtani, 2015; Belaineh, 2017). Students who engage in surface learning usually learn by memorizing facts, with minimal effort in ensuring he or she passes an examination (Felder & Brent, 2005; Yusoff & Arifin, 2015). This reiterates the importance of the learning environment in any educational programme and the fact that the way the environment is perceived by students goes a long way in determining the learning approach they will adopt and therefore, the extent to which learning outcomes will be achieved.

2.5. Principles underpinning learning in the medical Learning Environment

According to Knowles et al (2005), there are significant, identifiable differences between adult learners and learners under the age of eighteen. Adult learners have prior experience and are self-directing; they have greater resources for learning and are usually internally motivated to learn things that are of immediate relevance to their needs. Adult learning theory emphasizes the relevance of the learning experience to practice. Students are more likely to learn better if the learning experience has relevance to their future practice, and they are therefore actively involved in their learning. Understanding this will help in designing instructional strategies that will enhance the learning environment.

Although healthcare delivery is based on evidence-based practice, this is not so with instructional design in medical education. Rather than underpinning instructional strategies on empirically tested theories,

instructional procedures tend to be based on intuition rather than theory (Mcbride & Cantillon, 2016). The complexity of the field of medicine and the multifaceted nature of the outcomes makes it practically impossible to have a single theory that can describe how students in this field learn. Various theories have been used in conceptualizing medical curricula over the years, and in explaining how learning takes place and how clinical skills are acquired in the medical learning environments. These learning theories (behaviourism, cognitive theories, constructivism, social learning theory, situated learning and transformative learning theory) provide the foundation for understanding how learning is constructed in the medical environment and in developing relevant teaching strategies (Swanwick, 2011; Taylor & Hamdy, 2013; Walsh, 2013). In this section, a brief summary of the main learning theories relevant to medical education is discussed.

2.5.1. Situated learning

This is one of the general principles of knowledge acquisition. This theory focuses on problem-solving skills and the fact that students learn better if skills acquisition takes place within the context in which it is to be applied e.g. wards, clinics and the community as the case of health professions education. According to Lave & Wenger (1991), situated learning is a gradual acquisition of knowledge and skills from a novice to an expert in the context of everyday activities. These learning perspectives emphasised the need for knowledge to be presented in its natural context, that is, settings where the skill will be applied, such as the clinics, wards or the laboratory. This theory argues that learning happens as members share their knowledge and develop relationships within the community of practice. In the community of practice, some members are major members with a lot of experience, while others are newcomers and therefore more peripheral to the learning community. This theory points out to the fact that learning do not just not occur by observation, but as a novice, one gains experience by doing things himself, start as peripheral members and as proficiency increases, more responsibility is permitted within the community (Torre &Durning, 2013). This theory emphasised the importance of communities of practice and legitimate peripheral participation in ensuring learning. The learning environment provides the background for learning, the students typically start as novices, but as they observe the senior doctors, they advanced in the community of practice and acquire knowledge from their participation in medical encounters (Kaufman & Mann, 2010).

2.5.2. Experiential learning theory

This is is another concept explaining how the student learns in the medical learning environment. The experiential learning is based on the work of David Kolb (Kolb, 1984), and proposed that adult learns more effectively when they are more directly involved than when they are a passive receiver of knowledge transmitted by their teachers. He developed the "experiential learning cycle" (Figure 1) in which there are four distinct stages of learning. As he noted, the cycle can start at any stage, all stages are essential in order for one to learn effectively. These stages consist of (i) Concrete Experience (feeling) or direct involvement in the learning experience i.e. he or she is directly involved with the material rather than learning about it (ii) Secondly, he or gets opportunity to observe and reflect (watching) i.e. provided with opportunity to observe and think critically about the experience. (iii) The third step involves associating the experience with the theory or concepts underlying it i.e. conceptualization and generalizations (thinking). (iv) Lastly, an opportunity is provided for testing the implication of the concepts in a new situation i.e applying the skill in a new setting (Taylor & Hamdy, 2013). This can provide the basis for curriculum design as well as the choice of instructional strategies, particularly in the teaching of clinical skills in the medical learning environment.

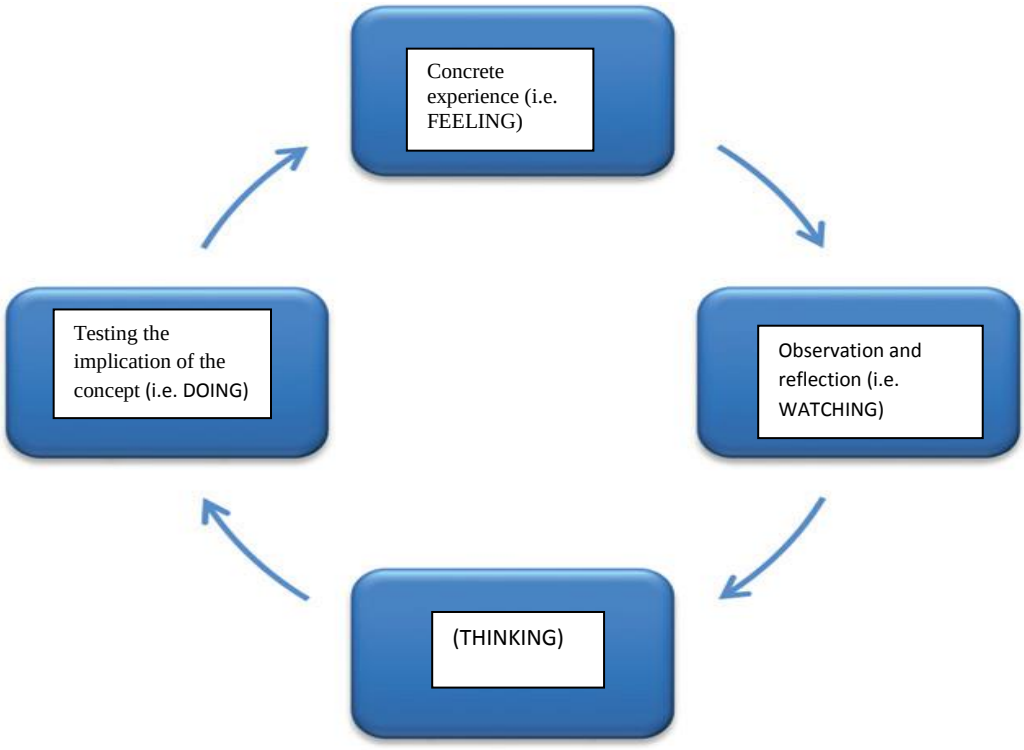

Figure 1

2.5.3 Cognitive learning theory

One key feature of the cognitive theory is the use of the higher center; understanding and compression i.e. the use of the mental and psychological processes of the mind, in the processing of information (Gagne, Briggs & Wagner, 1992). These are influenced by external and internal factors that influence one's attention and concentration. Ensuring active participation and engagement, with an opportunity to reflect or engage in critical thinking helps to maximize learning through this approach (Gagne, Briggs & Wagner, 1992). Effective learning can be ensured by creating a learning environment that allows active participation with opportunity for reflective thinking and void of any distractions.

2.5.4. Behaviorism

This form of learning is based on simple stimulus-response approach, here; reward is used to ensure an appropriate response to a stimulus (Skinner, 1954). According to Skinner, behaviour that is positively reinforced is likely to be repeated and those that are negatively reinforced tend to diminish over time. Reinforcing what was done right increases the opportunity for such behaviour to be repeated, and also correcting the mistakes leads to a reduction in the frequency of such negative behaviour to repeat itself. As noted by Mann (2011), the reward mechanism for student is an important factor in determining the effectiveness of learning environment, and feedback to students is central to this.

2.5.5. Constructivism

According to constructivist, people construct their own understanding and knowledge of the world by experiencing things and reflecting on those experiences. The Piaget's theory of Constructivist learning has had a great impact on learning theories and teaching methods in education and is an underlying theme of many education reform movements (Taylor & Hamdy, 2013). Adults generate knowledge and meaning as a result of the interaction between their own experiences and the new ideas (Taylor & Hamdy, 2013). As noted by Lave & Wenger (1991), learning is not isolated but learner learns as they participate in the community. Authentic learning environments occur when the instruction is designed to facilitate, simulate and recreate real-life complexities and occurrences (Bhattacharjee, 2015). This theory emphasized the importance of for active participation in learning a skill with hands-on experience, and the use of critical thinking skills allow one to make meaning from new experience based on past experiences.

2.5.6. Social cognitive theory

The social cognitive theory is based on the work of Bandura (Mann & Dornan, 2011). Bandura's social learning theory stresses the importance of observational learning. The theory posits that people learn from one another, through observation, imitation, and modelling and recognizes learning as both intra-individual and inter-individuals (Bandura, 1999). The learner constructs their own meanings and understandings inside their brain based on what they observed, though influenced by the social contexts from which the observation was made (Bandura, 1999). This theory integrates a continuous interaction between behaviours, personal factors including cognition and the environment. The theory explains human behaviour in terms of continuous reciprocal interaction between cognitive, behavioural, and environmental influences. The interaction between these three components is greatly influenced by the learning environment (Bandura, 1999). According to Bandura, (1999), people are agentic operator and not just observers, and as they observe, a host of brain mechanism goes on into play. This can be the basis for facilitating learning in the clinical learning environment by providing an opportunity to observe, reflect on such observation and make appropriate inference.

2.5.7. Deliberate practice

Another learning concept that explains how learning takes place in medical education is deliberate practice. The hallmark of this principle is to ensure attention, concentration, effort, and repetition of skills until one becomes fluent in the skill (Erickson, 2004). This can be facilitated through an active participation of every student and by deconstructing tasks into their component elements to reduce the cognitive load on students during learning. Ensuring close observation and feedback based on well-defined objectives are also essential components of deliberate practice. And according to Issenberg & McGaghie (2002), these help students to focus on areas of strength and weakness.

2.5.8. Transformative learning theory

Transformative Learning is based on the work of Mezirow in the 1970's (Mezirow, 2000). The theory gives a description of how learners interpret, validate, and reformulate the meaning of their experience. According to Merriam & Caffarella, (1999), there are three keys to transformational learning: experience, critical reflection and development. Experience is an important factor in one's ability to create, retain and transfer knowledge. Critical reflection is the second key to transformational learning. Typically, learning occurs when an individual experience an alternative perspective and questioned the previous approach or habit. Learning becomes transformative when an alternative perspective is considered by reconsidering and revising current beliefs. Reflection creates an opportunity to appraise

one's specific beliefs, attitudes, and emotional reactions, which in turn leads to a perspective transformation. The third key to transformational learning is development. With transformative learning, the learner becomes aware of his assumptions with a resultant change in perspective and the reason to act upon these new understandings.

2.6. Methods of assessing students' perceptions of the Medical Learning Environment

The learning environment is an important factor in facilitating learning and ensuring that the objectives of any teaching and learning activities are realized. Nonetheless, the students' perception is influenced by several factors ranging from their academic performance, the experience of burn-out, psychological stress, their overall quality of life and resilience. Even though controlling for all these factors may be challenging, there is no doubt that the way the students perceived their environment influence their performance and hence, their learning outcome.

As highlighted earlier, it is obvious that several factors influence the perception of the learning environment, particularly in undergraduate medical education; therefore, designing an appropriate and accurate measurement of the learning environment is a great challenge. In an attempt to overcome this, various instruments have been developed to measure the educational environments in health professions education, each with its own unique strengths and drawbacks. Such instruments or inventories include the Dundee Ready Education Environment Measure (DREEM) (Roff, et al. (1997), Learning Environment Questionnaire (LEQ) (Moore-West et al., 1989) Medical School Learning Environment Survey (MSLES) (Marshall, 1978), the Surgical Theatre Educational Environment Measure (STEEM) (Cassar, 2004) and the Postgraduate Hospital Educational Environment Measure (PHEEM) (Roff et al., 2005) . Of these, the DREEM has been developed to enable global rating of the undergraduate learning environment (Miles et al., 2012).

The DREEM is a 50 item questionnaire which assesses five domains (Roff et al., 1997): (i) students' perception of learning, (ii) students' perception of teachers, (iii) students' academic self-perception, (iv) students' perception of the atmosphere, and (v) students' social self-perception. Items with a mean score of ≥3.5 out of 5 represent "true positive points" of the environment, whilst those with a mean score of ≤2 indicate problem areas. Scores in between these two limits indicate aspects of the environment that could be enhanced.

Several research approaches have been used to explore how students perceive their learning or educational environments and include: qualitative research approaches (Palmgren & Laksov, 2015;

Hegenbarth et al., 2015), quantitative research approaches (Abraham et al., 2008; Boor et al., 2011; Strand et al., 2013; Buhari et al., 2014; Okoye et al., 2017; Ogun, Nottidge & Roff, 2018), and mixed-methods research approaches (Whittle et al, 2007; Denz-Penhey & Murdoch, 2009). As noted by Palmgren & Laksov, (2015), the use of quantitative research approaches is complex as this approach allow for the exclusion of some important elements of the learning environment. Although quantitative approaches provide information about students' perception of the educational environment, they often yield restricted insight into the complexity of educational environments (Snadden, 2006).

Qualitative approaches address the "how" and "why" research questions and allow a deeper understanding of experiences, phenomena, and context (Cleland, 2017). With the qualitative approach, questions that cannot easily be quantified can be included; thereby providing a better way of understanding the human experience under investigation. This approach to inquiry provides an opportunity to understand human experience in all its complexity and in its natural settings (Wu & Volker, 2009). It provides an understanding of how the social world is interpreted, understood, experienced, or constructed (Wu & Volker, 2009). In this study, a qualitative approach to inquiry was adopted in order to explore and understand participants' perspectives and experiences and to ensure the depth and richness of data.

In Nigeria, only a few studies (Anyaehi et al., 2011; Buhari et al., 2014; Okoye et al., 2017; Ogun, Nottidge & Roff, 2018) have looked at medical students' perception of their learning environment despite the recognised challenges with teaching and learning in this field. The study by Anyaehi et al (2011) essentially looked at the learning environment of medical students while in the department of physiology while Buhari et al (2014) and Okoye et al (2017) conducted their studies in old federal medical schools with an established teaching and learning culture. According to Okoye et al (2017), the global score on the Dundee Ready Education Environment Measure (DREEM) inventory showed that the students' perception of the learning environment was more positive than negative, however, no individual item scored more than 3.5, indicating that no item can actually qualify as a "true positive point," going by the practical guide. In fact, 19 of the items scored less than 2, indicating problematic areas. Similarly, Buhari et al (2014) reported that the learning environment as rated by students using the DREEM questionnaire was adjudged more positive than negative in terms of students' perception of learning. Students' academic self-perceptions were rated as positive, while students' perception of course organizers, students' perception of atmosphere and students' social self-perceptions were rated

negatively. The learning environment was rated as positive in these studies, despite the fact that several areas were identified where significant improvement needed to be made.

All these studies utilized a quantitative approach to inquiry, thereby denying the opportunity for an in-depth study of the learning environment. A qualitative approach, on the other hand, provides the opportunity to collect data with a depth not usually possible in quantitative data, and more importantly, to fully understand participants' thoughts, feelings, and experiences. According to Meadows et al (2003), the qualitative approach gives the researcher a repertoire of tools to investigate important questions. Furthermore, it provides the ability to understand participants' perspectives and experiences and to focus on the depth and richness of data.

2.6. SUMMARY

The learning environment is an important factor in facilitating learning and ensuring that the objectives of all teaching and learning activities are realized. From literatures, the students' perception of the learning environment is influenced by several factors such as students' academic performance, learning styles adopted, the instructional strategies, the experience of burn-out, psychological stress, their overall quality of life and resilience. This underscores the fact that the way the students perceive their environment influences their performance and hence, learning outcome.

CHAPTER THREE

METHODOLOGY

3.1. Introduction

Chapter three provides information on the study research design (the conceptual framework that direct the study), the study population, approach to data collection and analysis, ethical considerations and how trustworthiness was ensured.

This study was conducted at the Faculty of Clinical Sciences, Ekiti State University, Ado-Ekiti, Nigeria. The undergraduate programme in medicine is divided into a conventional two and half year preclinical phase and a three and half-year clinical phase. The pre-clinical phase consists of 12months of basic sciences and 18 months in the basic medical sciences (Anatomy, Physiology and Biochemistry) and introduction to Community Medicine. In the clinical phase, students rotate through the clinical departments within the university at the hospitals and at primary care settings. During the course of their rotations, students have a mixture of theoretical knowledge and learn clinical skills. Rotations in each unit last for two to twelve weeks depending on the department. At the end of each rotation, they are assessed through theoretical and clinical examinations.

The medical school has five sets of medical students at a different stage of their training. In all, there are 178 students with 76 in their clinical phase while the rest are in their pre-clinical phase.

3.2. Study design

An inductive approach to understand how the participants in the study (the students) experience the learning environment and the effect it has on the learning outcomes of the students was adopted. A qualitative research design using focus group was used to gather student experiences. This provided the opportunity to promote interaction, stimulate participants, hear different viewpoints and the expression of facts and opinions that they otherwise might not have chosen to reveal (Kvale & Brinkmann, 2009). It also provided the opportunity to clarify attitudes and beliefs (Skinner, 2014).

3.3. Study Population

The target population was the entire group of medical students in the clinical years at the Ekiti State University Medical School. Currently, there are two classes (years 4 and year 5) of clinical students each with 33 and 43 students respectively, each with two sub-groups.

3.4. Participants

Purposive sampling was used to choose participants to ensure that the sample covers the possible characteristics of interest. This takes into account representation of different subgroups and gender in the study population. Each academic year is usually divided into 2 sub-groups (each with different clinical rotation per time), and in all, the two sets of students have four sub-groups. Four focus group interviews were conducted; two from each class i.e. one from each sub-group. The selected number of participants was within the acceptable norm for effective and meaningful focus group discussions, consisting of eight students per focus group (Krueger, 1998; Krueger & Casey, 2009).

Table 1: Summary of study population and selection of participants

Class	Total (No of Participants)	Male (No of Participants)	Female (No of Participants)
5th year	A 16 (7)	12 (5)	4 (2)
	B 17 (8)	13 (5)	4 (2)
Total	33 (15)	24 (10)	9 (4)
4th year	A 22 (8)	1 5 (5)	7 (3)
	B 21 (7)	17 (6)	4 (2)
Total	43 (15)	32 (11)	11(5)

3.5. Data collection

The study utilized a qualitative approach to data collection using focus group interviews. An interview guide (see Appendix A) was developed based on the five DREEM subscales i.e. students' perceptions of learning, teaching, academic self-perceptions, atmosphere, and social self-perceptions, to navigate discussions. These consist of careful selected questions based on the DREEM questionnaire and other relevant questions that are related to the study's research question and objectives. The overall interview structure was compiled using a series of carefully planned, introductory, transitional, key, and ending questions phrased in a conversational manner as outlined by Krueger, (1998). Each focus group interview was audio-taped. The researcher served as the facilitator. The questions asked in the focus group discussion were about the system and not about individuals in the system, which some of the students may not want to comment about. Prior to the commencement of the study, they were

reassured that their response (whether positive or negative) will not affect them in any way and every member of the group was advised to respect confidentiality. In fact, this helped in guiding the interview to areas of focus. Each interview session was conducted in a seminar room in the faculty with each lasting about 75 to 90 minutes. In the course of the interviews the main questions were followed by questions such as “give an example”, “can you explain?” “What do you mean?” and so on.

A pilot interview was conducted prior to the commencement of the main study. This was used to test the interview guide, have an idea about the duration of the interview, the effectiveness and efficiency of the audio system to be used for recording. All the participants in the pilot study were excluded from the main study and were all reimbursed for their time.

3.6. Data Analysis

The raw data incorporated notes during the course of the interview and audio recordings of the focus group discussions. This data was prepared for analysis through the transcription of the audio recordings. The transcribed data was subsequently checked by the researcher not just as a means of quality measure but also to engage with the data.

Thematic analysis as described by Braun & Clarke (2006) was conducted by the researcher to address the qualitative aspects of the research question. This involved line-by-line examination of the transcripts with the aim of identifying sub-categories and categories without pre-determined coding schemes. The analysis according to Braun & Clarke (2006) incorporates six steps: (i) reading the transcribed interviews several times to become familiar with the text; (ii) then generating initial codes for the data i.e. creating codes depicting the phenomenon under investigation; (iii) the third phase involved sorting the different codes into potential themes; (iv) then, the themes were refined; (v) the fifth step was to capture the essence of what each theme is all about and what aspect of data each theme captures; (vi) and lastly, final analysis and write up of report.

3.7. Limitations

This study was conducted in a single centre; a relatively new medical school with its own peculiarities. This may have limited the generalizability of the results to different settings. However, from the review of the literature and triangulation of the findings, similar observations had been reported in other settings, thus enhancing the conformability of the findings. Where possible, the findings were compared to other findings in similar settings thus ensuring the conformability of the findings. There was also a

possibility that students may have wanted to please the researcher (their lecturer, who is in a position of authority and power over them) by emphasising positive aspects of relating to lecturers. However, the researcher tried to acknowledge and minimise his assumptions, values and biases on the interview as well as identified how these might influence the findings. Reflexivity was minimised by feeding reflexive insight from earlier interview into the next to reduce participants' biases and the same time participants in each focus group were encouraged to give honest report that is not based on sentiments and desired to please the interviewer.

Purposive sampling was used to choose participants; this may have introduced a selection bias to the study. However, this was minimized by ensuring participants were selected based on common or diverse characteristics of interest and on the research question and objectives.

In this study, the researcher also served as the facilitator during the focus group interviews, and there is a possibility that this may have limited the extent to which some participants respond to some of the questions during the interview. This was minimized by explaining the purpose of the study to each participant and encouraging every member of the group to ensure the confidentiality of the discussions. Besides, most of the items discussed were not very sensitive issues or issues relating to individuals but about the system. In addition, the researcher was able to build rapport with the participants by creating a warm, supportive and comfortable environment that encouraged open and honest dialogue. The researcher being the facilitator helped in probing different answers for more in-depth discussion based on the focus of the research.

3.7. Ethical considerations

Informed consent was sought for and obtained from each student. Each student was given a written consent form which each participant signed. The study was voluntary and in no way was any student coerced into the study. Any information shared with the researcher during the study and that could possibly identify the participant was protected. Group members were requested to respect confidentiality. No one else apart from the researcher had access to the raw data and this was secured with a password on the computer.

In preparation for data collection, the interviewer made an arrangement with a colleague who is well experienced in conducting focus group interview for training. He was also available during the pilot study. In addition, an online training video by R. Krueger, (https://richardakrueger.com/focus-group-interviewing) on the principles and practice of focus group interviews was also accessed.

Ethical approval was sought and obtained from the Health Research Ethics Committee of the Faculty of Medicine and Health Sciences, Stellenbosch University with reference number S18/03/060 and Research and Ethics committee of the Ekiti State University Teaching Hospital with reference number A67/2018/08/003.

3.9. Trustworthiness

Trustworthiness refers to the degree of confidence a researcher has in his qualitative data using the strategies of credibility, dependability, confirmability, and transferability (Polit and Beck, 2012; Mandal, 2018). These strategies help the researcher to demonstrate that both the data and the conclusions drawn from his findings truly represent participants' views or experiences. In order to ensure the trustworthiness of this study, the following strategies were employed:

First, *credibility* was enhanced by ensuring that the research findings represent plausible information drawn from the participants' original data and that correct interpretation of the participants' original views and their responses were summarised after each question. Prior to the commencement of the interview, the essence and purpose of the research were clearly communicated to the participants and they were notified of the ethical measures in place to support their participation and confidentiality.

To ensure the degree to which the results of this research can be *transferred* to other contexts or settings with other respondents, a thick description of the findings and the context of the study were provided. In addition, the sampling strategy was explained and the findings were compared to existing literature in the final report of the study. These strategies also enhanced the conformability of the findings. *Conformability* was further enhanced through the process of reflection by the researcher about his influence on the findings. Lastly, the process and findings of the study were discussed with my supervisors who are more knowledgeable in qualitative and health professions education's research.

3.10. Conclusion

Chapter three outlined the research design, the process of data collection using a qualitative inquiry while ensuring the trustworthiness as well as a strict ethical code of conduct. It also provided an overview of approach to analysis of data sets from the interviews. The next chapter provides the summary of findings based on data collected following this methodology.

CHAPTER FOUR

FINDINGS

4.1. Introduction

As already highlighted in Chapter One, this study investigated how medical students perceived their learning environment in a new medical school in Nigeria using qualitative approach. The findings from this study included four data sets drawn from four focus group interviews with a total number of 30 students; representing about 40% of the total study population. The participants that took part were a fair representation of the overall class demographics; each consisting of at least two females; a ratio similar to that of the study population (M: F; 3:1).

As described in chapter three, each data set was derived from the transcription of the focus group interviews for the study. The transcribed interviews were read and re-read and coded to identify the categories. The emerging categories from the analysis of the data sets were grouped into three themes. Theme one (table 2); the foundation for teaching and learning which deals with the essentials for teaching and learning incorporating three categories: the basics, teaching aids and the expectations and realities. Theme two (table 3); 'the promoter' deals with things in the learning environment that enhance learning and consist of two categories; social perception and the learning atmosphere. The third Theme (table 4) is the extent of learning which deals with the degree to which students perceived they have learnt, and this incorporates academic self-perception (table 4). These are extensively discussed in this chapter. *The abbreviation G=Group, M=Male, F=Female e.g G1M3: Group 1, 3RD Male*

4.2. Theme1: The foundation for teaching and learning

This theme refers to the basic facilities required for the enhancement of teaching and learning; from infrastructures to teaching aids that facilitate learning. Theme 1 comprised three categories, namely:

4.2.1. Category 1: The Basics

The participants identified some challenges with the physical components of the learning environment that affect teaching and learning. Although they agreed that there are adequate classrooms and laboratories for now, the need to make this more conducive by ensuring the provision of basic comforts such as air conditioning, adequate overhead projectors, and cushioned chairs in the classes were highlighted by most of the participants. Even though some of these were available, their utilization may

be hampered by poor supply of electricity which they also identified as a major barrier to effective teaching and learning. As one of the participants remarked *"The issue of electricity is a major challenge. Electricity changes the quality of life" (G3F2).* "*Yes, it (electricity) is a major challenge, many of our lecture notes are soft copies and are on our devices which need a constant power supply to be charged, besides we need electricity to pump water and work in the laboratory"* (G4M4). Inadequate supply of electricity was identified as a major factor affecting teaching and learning; from teaching in the classroom to personal study and other activities in their hostels.

The siting of the some of the available facilities such as the medical library and pathology laboratories were also described as awkward; particularly the medical library which is inaccessible. *"We are in the teaching hospital and the medical library is located in the main campus, this makes it inaccessible" (G3M2)*. Nevertheless, as noted by one of the participants, the facilities on ground are stimulating enough for any serious student to learn.

4.2.2. Category 2: Teaching aids

Lack of adequate teaching aids was also identified as a hindrance to effective teaching and learning. These range from of audio-visual aids to equipment at the teaching hospital and when available, it is hampered by the poor power supply. The absence of some equipment in the Teaching Hospital makes learning of some procedure abstract. As noted by some of the participants *"those things they were telling us, we want to see them, we want to touch them, if you have to imagine, definitely you have to memorize" (G4M5*). "*When we are in O&G posting and they were talking about a manoeuvre, I checked on the internet and the person was doing it with a mannequin, if we had that we would have understood better" (G3F2)*.

4.2.3. Category 3: Expectations and realities

As discussed by the participants, an ideal medical school should have good physical structures with basic facilities for comfort and for teaching and learning. "*An ideal medical (school) should have well-structured buildings…have basic diagnostic tools such as CT scan, MRI, well-equipped Teaching Hospital, furnished library with internet access, the classroom should be stimulating and inviting (G3M5).* Besides, there must be facilities for recreation, such as sports facilities, and an opportunity for inter-school competitions; which they believe will provide opportunities to interact with medical students from other institutions. *"An ideal medical environment should provide opportunities to participate in social activities such as sports, quiz, seminar, counselling unit, …opportunities for financial support, grants, and*

scholarship" (G4M3). Such a medical learning environment should provide an opportunity for exchange programmes, both locally and internationally. This, they said, would provide an opportunity to see and learn about things they do not have access to in their own institution. In addition, in an ideal medical school, one must be aware of the date of graduation at the time admission, this, they believe will motivate students to want to learn.

Financial aids and scholarship are among their expectation of an ideal medical learning environment. They believe this will reduce the financial burden on students, particularly those with some financial challenges. They believe this will help students with financial challenges to cope, rather than being exposed to incessant embarrassment by school authorities as a result of the inability to pay school fees and other levies. Apart from financial aids, participants expected an ideal medical learning environment to provide accessible medical care to students as well an opportunity for counselling for those who may need such.

Looking at all these expectations of the ideal medical learning environment, the participant rated the current circumstances at the university ranging between 10-60%, with all the groups agreeing on an average of 30-40%. They ascribed this to an inadequacy or absence of some of the factors highlighted above.

Table 2: Theme One: The foundation for teaching and learning

THEME	***Narrative data (quotes)***
Category 1: The basics	There are adequate classrooms made available for learning, Classrooms not in an ideal condition……no air conditioning; wooden chairs make sitting uncomfortable when in a protracted lecture; absence of functional toilets (G4F1); …to retain maximally, the environment must be conducive (G2M2)…Hostels are good and conducive considering the number of students occupying a room ….the institution is trying but there is still room for improvement (G1M1) The issue of electricity has been a challenge..(G2M5); In this age, we need electricity to read and charge our devices" (G2M2) …and if there is no electricity, there is no water, we can't charge our devices, we can have practical (G3F1). ..but there are cases of misplaced priorities like the medical library, we are in the teaching hospital and the medical library is located in the main campus, this makes it inaccessible" (G3M2); the facilities on the ground is stimulating for a serious student to learn (G2M4)
Category 2: Teaching Aids	Two of the projectors in the classes are not working (G2M2); Those things they were telling us, we want to see, we want to touch them ….if you have to imagine, definitely you have to memorize (G3M3). There are times machines are down, …when we are in O&G posting and they were talking about a manoeuvre, I checked on the internet and the person was doing it with a mannequin, if we had that, we would have understood it better (G3F2)
Category 3: Expectations and realities	An ideal medical should have well-structured buildings…have basic diagnostic tools such as CT scan, MRI, well-equipped Teaching Hospital, furnished library with internet access, the classroom should be stimulating and inviting (G3M5). An ideal medical environment should provide opportunities to participate in social activities such as sports, quiz, seminar, counselling unit, …opportunities for financial support, grants, and scholarship" (G4M3); you know the graduation day at the

	time of admission (G2M6); well-equipped hostels, there should electricity and water supply (G1M1); each department with at least minimum required lecturers, well-equipped hospital similar to what we see on television G4M3; such an ideal environment should provide you with learning environment to compete favourably well with other medical students outside….(G3M2); an ideal medical school should be affordable (G4M3); …there should be smooth running of the school……strike action has been affecting smooth running of the teaching hospital ….and affect patient patronage(G3F1). We are still warming up, very far! Because, all we call ideal, we don't have it. (G3M3)

4.3. Theme Two: The Promoters

This theme constitutes things in the learning environment that participants saw as facilitator of learning or the absence of which impaired their learning. These ranged from tangible to intangible things, from social to behavioural that were thought to be necessary to maximize learning in the medical learning environment. These are discussed under two categories; the social perception and the learning atmosphere:

4.3.1. Category 1: Social perception

Participants identified some key social issues which they believed would enhance learning. Among such, is the good student-teacher relationship, creating an opportunity to interact with other medical schools within and outside the country, recreational facilities, the provision of sport facilities, opportunities to engage in debate, organized sport activities with other medical schools and the engagement in exchange programmes. They believed this will provide opportunities for them to have access to facilities and equipment they do not have that others do have. As remarked by one of the participants *"our social life is constricted and our level of exposure is low compared to other institutions" (G3M3).*

Additionally, participants identified the need for the institution to provide an opportunity for financial aids and scholarships to reduce the financial burden on students; particularly indigent students with

financial challenges. *"Students can be emotionally disturbed about the various levies which each student is required to pay… some students are threatened to pay such fee during or before examinations which no doubt will affect such student emotionally" (G4F1).* The participants also discussed the need for a student counselling unit, which they believe will provide an opportunity for students with challenges; either academically or emotionally.

4.3.2. Category 2: The learning atmosphere

Virtually all the participants described the relationships that exist between the students and their lecturers as excellent. As remarked by one of the participants "*the relationship between lecturers and students here is exceptional and excellent, they relate to us as brothers and fathers, the gesture I see enhances learning*" (G3M2). However, a small number discussed the use of derogatory words by some lecturers, particularly when they are asked questions and do not know the answer. This they said inhibits learning as it does not encourage you to think. *"You don't have to wash them down and make feel like they are never going to know it...by wash down, I mean derogatory way of relating with students" "*(G2F2). Nevertheless, some students said this (use of derogatory words) may be a motivation to adequately prepare for ward-rounds.

Opportunities for active engagement in the learning process and the care of patients are other factors discussed as a promoter of learning. *"You learn better when you participate actively….we are encouraged to participate in the management of patients (G3M3).* Such opportunities for active engagement were attributed to the smaller number students in each group. As noted by some members of the groups, having several lectures in a day and some lectures in the afternoon leads to exhaustion and reduces interest in such lectures. As remarked by a female participant in one of the groups *"we have several lectures at a stretch and by the time you are having the fourth, I'm not gaining anything"* (G3F2).

Another important factor that participants highlighted as reducing motivation to learn was the uncertainties surrounding the date of graduation due to challenges related to the accreditation of the programme. An ideal medical school should be accredited from the onset they noted; *"...but in a situation where you've overstayed, you lose focus"* G4M4.

The participants reiterated that the extent to which they were stimulated to learn depend on the lecturer and the subject. Some teach you and you are motivated to want to know more about the concepts, a male from one the groups remarked. On average, the participants felt that most of the

teaching and learning experiences in the school are student-centred. However, they described the pre-clinical phase as being more teacher-centred. As highlighted by some of the participants "*I feel the clinical aspect encouraged me to want to learn more…….the pre-clinical was not easy (G3F1), stimulating! It has to do with the lecturer (G2F2).* With respect to the clinical learning environment, the majority affirmed that it is student-centred with most lecturers making an effort to ensure that the students understand the concepts being taught.

Table 3: Theme Two: The Promoter

Categories	***Narrative data (quotes)***
Category 1**: Social perception**	There should be opportunities for students to participate in social activities such as debates, sports; inter-school activities (G1F2); There should be opportunity for interschool exchange of students; national and international conferences, and charitable activities (G1M2); The welfare in the institution is poor (GIM1); our social life is constricted" and our level of exposure is low compared to other institutions" (G3M3); "we don't go out for competitions because we don't have a union, so we just remained in our shell (G3F2); we are just here, if a person has issues at home it will affect….Our level of exposure is low compared to other institution, …there is need for provision of recreational facilities (G3M3); the financial background at home can affect student and cause emotional instability for a student and this can cause low performance (G2M3); Students can be emotionally disturbed about the various levies each student is required to pay, … some students are threatened to pay such fee during or before examinations which no doubt will affect such student emotionally" (G4F1); school management should ensure provision of financial aid and scholarship opportunity, counselling units for students …..these are relief factors(G2F2)
Category 2: The learning atmosphere:	the relationship between lecturers and students here is exceptional and excellent, they relate to us as brothers and fathers, the gesture I see enhances learning (G3M2) "…the ratio of students to lecturers makes the whole thing encouraging (G1M3), "…the relationship between teachers and students in this medical school is excellent …almost all the lecturers know us

	by name (G3M2); There are instances when you are insulted because you do not know the answer (G2M2). You don't have to wash them down and make feel like they are never going to know it...by wash down; I mean derogatory way of relating with students (G2F2). You learn better when you participate actively….we are encouraged to participate in the management of patients (G3M3). We have several lectures at a stretch, and getting to the fourth, I know I am not gaining anything again (G3F2). Uncertainties about graduation due to accreditation issues reduce motivation (G1F1); ….but in a situation where you've overstayed, you lose focus (G4M4) It is relative…., some will teach and you will be willing to learn more and some will teach and you will feel like there is no way (G3M4); stimulating! It has to do with the lecturer (G2F2). It has to do with the lecturer teaching you, some lecturers will teach and you will be stimulated to want to learn, but there are some that maybe by nature or personality it is not stimulating G3F2. I think they are giving us more than we need (G3M2), "The preclinical is more of teacher-centred approach. You cannot survive in clinical without understanding; in about 70% of case you ensure understating in clinical (G1M3). I feel the clinical aspect encourages me to want to learn more….the pre-clinical was not easy" (G3F1). In our O & G posting we had about eighty (80) lectures in two (2) weeks, so it not stimulating unlike when it is spread over time (G2M4).

4.4. Theme Three: The extent of learning

This refers to the degree to which students perceive they have learnt; acquiring knowledge and skills that will permit them to practice as doctors after graduating.

4.4.1. Category 1: Academic self-perception

The relationship between the lecturers and the students was described as one of the factors facilitating learning. The lecturers were approachable and that gives an opportunity to clarify things or ask questions. Besides, the low students to lecturers' ratio also give an opportunity for better students'

engagement they said. *"The lecturer to student ratio is highly advantageous as we are able to learn better. ….we can stand shoulder high with colleagues from other institutions" (G1M2).* The students agreed that they have more of a deep approach to learning than a superficial one. As rated by the participants, in about 60-70% of the cases they engaged in deep learning in the clinical stage compared to 30-40% during the basic medical sciences year; where they said the extent also varied depending on the subject. For example, with the subject biochemistry, almost 100% of the participants adopted a superficial approach to learning.

Participants believed that considering the way they were taught, and with adequate preparation on their side, they were confident of passing their exams and should be able to compete favourably well with their peers.

Table 4: Theme Three - The extent of Learning

Categories	***Narrative data (quotes)***
Category 1: Academic Self-Perception:	"The lecturers to students ratio are highly advantageous as we are able to learn better ….we can stand shoulder high with colleagues from other institutions"(G1M2), "I engage in both memorization and understanding; but more with understanding. You learn better when you participate actively….there are sometimes you have to cram (G3M3). I think I can confidently say I'll pass an exam so far I've done my own part (G3M5). "Cramming! it is subject related……preclinical more of cramming, pre-clinical 60-70% memorization, clinical 70% understanding; …compared with our colleagues from other schools and countries like Ukraine, the Caribbean, and others, some things they find it difficult to do, such we have probably done or assisted" (G2M3).

CHAPTER FIVE

DISCUSSION

5.1. Introduction

This study looked at the perception of the learning environment by medical students in a new medical school in Nigeria with the aim of gaining an understanding of strengths and weaknesses of the learning environment, identifying the perceived challenges confronting teaching and learning and understanding the students' perspectives of an ideal medical school learning environment.

The findings were carefully examined in order to uncover key issues that relate to the research question and objectives of this study. These issues will be discussed in relation to themes identified from the data sets of the study and in light of the available evidence in the literature. This chapter provides the third level of synthesis of the findings in chapter four. Chapter five presents the explanatory framework that addresses the research question and the objectives of the study.

5.2. The emerging themes from the study

The emerging themes from this study are: the foundation for teaching and learning (incorporating *the basics, teaching aids, expectations and realities),* the promoter (*social perception, the learning Atmosphere),* and the extent of learning (*Academic self-perception).* Relevant findings that relate to the objectives of this study will be discussed under these categories that constitute the broad key themes.

5.2.1. The Basics

Adequacy of classrooms, laboratories, seminar rooms, and accommodation for clinical students were identified as the strength of the learning environment. Participants however, complained of inadequate equipment and other essential facilities such as audio-visual aids, comfortable chairs, air-conditioners, laboratory equipment, and teaching aids to maximize teaching. The absence or inadequacy of such basic equipment may impact negatively on teaching and learning. Osarenren-Osaghae and Irabor (2012) in their assessment of the availability and adequacy of human and material resources for the teaching and learning of skill-based courses in Nigerian Public Universities, reported that human and material resources on the ground for the teaching and learning of skill-based courses in Nigerian Public Universities did not match the minimum standard requirement recommended by the National Universities Commission. The absence of such essential facilities may impair the quality as well as the

outcome of teaching and learning. Absence or inadequacy of such facilities or teaching aids may limit the quality of teaching as well determine the approach to teaching (Nair et al., 2017; Chonkar et al., 2018). The availability of teaching aids such audio-visual aids, clinical skill laboratories or Simulation-Based Learning (SBL) facilities provides a cost-effective and safe educational tools for achieving educational goals, more importantly in modern health professional education (Boysen-Osborn et al., 2016; Dagnone et al., 2016).

Additionally, the participants recognized irregular electricity supply as a major challenge to effective teaching and learning in their learning environment. As discussed by the participants, this tends to have a significant deleterious effect on learning. In today's world, most of the engagement in learning involves the use of computers which depend on electricity for effective utilization. In addition, teaching and learning engagements also depend on electricity; from the use of audio-visuals in the classroom, equipment in the laboratories as well as other gadgets to demonstrate some procedures. This obviously is one of the major weaknesses or challenges of this learning environment as identified by the participants. As some of the participants remarked, *"the issue of electricity is a major challenge, electricity changes the quality of life (G3F2) …Yes, it is a major challenge, many of the lecture notes are soft copies and our devices need a constant power supply to be charged, …….pump water, work in the laboratory"(G4M4).* This shows the negative impact of the inadequate supply of electricity on teaching and learning. The United Nations Department of Economic and Social Affairs (UNDESA) states that with the availability of electricity, there is a provision of lighting which enables longer studying/classroom hours at learning institutions. As noted by Sovacool et al (2012), electricity facilitates both improved quantity and quality of studies. This obviously shows that an inadequate supply of electricity may impact negatively on teaching and learning and learning outcomes. As identified by the participants, this is one of the major challenges in this learning environment currently confronting teaching and as it affects everything from the classroom to the hospital, the hostels and to personal study.

5.2.2. Social perception

In this study, participants identify some important social issues that impact on the learning environment. One important social issue identified as strength of the learning environment is the cordial relationship between the students and their teachers. Virtually, all the students described the student-teachers relationship as excellent. As they noted, most of the lecturers relate with them as fathers and brothers or mothers and sisters as the case may be. The students highlighted this relationship as a factor that enhances learning, as it gives them an opportunity to approach their teachers and ask questions or

clarify things from them. Such a cordial relationship was identified as a promoter of learning. According to Haidet & Stein (2006), student–teacher relationships occupied a central position in medical education, and are essential to favourable learning outcomes. Some authors (Wilkes & Raven, 2002; Haidet & Stein, 2006) reported an association between high-quality student-teacher relationships and students' intrinsic motivation to learn. Such relationships can determine the extent of learning and in the formation of professional identity can be a powerful tool on students' professional choices, behaviour and in the negotiation of feedback (Cuncic, Regehr, Frost & Bates, 2018).

The participants described the social environment presented by this medical learning environment as "constricted". As remarked by one the participant *"our social life is constricted, not even a bit, it is constricted"*. Tempski et al (2012) identified harsh social realities, as well as the scarcity of time for leisure activities and relationships, as factors that negatively influence the quality of life of medical students. As participants expressed, there was no opportunity for sporting activities and other social events such as quizzes and debates which they perceived limited their interaction with other medical schools. There was also no opportunity for interschool exchange of students; students felt that attendance of national and international conferences and participation in charitable activities may enhance their learning. These appear to be a challenge not only in this learning environment but in most medical learning environments (Aghamolaei & Fazel, 2010; Buhari et al., 2014; Idon, Suleiman & Olasoji, 2015; Ogun, Nottidge & Roff, 2018). Idon et al (2015), identified boredom to be a problem among the dental students studied. Similarly, the social self-perceptions subscale of the DREEM questionnaire was rated as below average (45.7%) by medical students of the University in Ilorin, Nigeria (Buhari et al., 2014). The perception of the social environment was adjudged 'not too bad' and 'not a nice place' by medical students at the University of Ibadan and the University of Uyo (both in Nigeria) respectively (Ogun, Nottidge & Roff 2018). All these findings suggest that the experience of the participants in this study may not be localized. This calls for the need for the institutions to support students and ensure a learning environment that promotes healthy social interaction and extracurricular activities.

The participants identified the absence of financial aid and scholarship opportunities as major challenges in this learning environment. Students experiencing difficulties with payment of school fees are often sent out of class, they noted. Such an act may have a profound effect on such students' learning. Studies looking at the reasons for discontinuation of courses at university identified financial difficulties among other factors as one of the major factors for the current attrition rate (Smith & Naylor, 2001; Latif, Choudhary & Hammayun, 2015). This calls for the need for government and other relevant agencies to

provide opportunities for financial assistance and scholarship opportunities for medical students in need.

5.2.3. The learning atmosphere and presentation of knowledge

Despite the fact that the student-teacher relationship was described as excellent, a few of the participants still highlighted the issue relating to bullying or the use of derogatory language by some of their lecturers, particularly when students do not know answers to the questions asked by the lecturer during ward-rounds or other clinical activities. According Wood, (2006), bullying and harassment is a common occurrence in all organizations, with higher rates in healthcare institutions. Such behaviour has significant effects on the psychological well-being of the person being bullied or harassed, particularly in the choice of future career choice, performance, and retention within the profession.

Jamieson et al (2015) reported that over a half of the students studied reported being bullied. Students who viewed their teachers treating them with respect tend to have higher grades and high performing students on the other hand, reported a higher level of respect shown to them (Abdulrahman, 2007). Wearn et al (2010), however, identified the need to clearly define what appropriate behaviour is, and what it is not, particularly as related to student-teacher relationships to prevent such occurrences. Medical Students in New-Zealand identified the need to place a higher value on the student-teacher' relationship in an attempt to prevent a bullying culture (Wearn et al, 2010). Such comments or attitudes (as noted by a student in this study) may affect students' self-esteem and reduce their engagement in such clinical activities. As noted by Berryman, (2015) a large proportion of students encounter what they perceive as bullying or harassment, and such behaviour may have a negative impact on students' learning and wellbeing. In contrast, one student in this study was of the opinion that such experiences or attitudes may serve as motivation for adequate preparation in a subsequent academic engagement.

One of the key strengths of this learning environment noted by the participants is the opportunity for active involvement in patient care. The participants attributed this to the relatively small groups in which this involvement occurs. Ensuring active participation of the student in the learning process has been shown to facilitate learning (Ramnanan & Pound, 2017). However, some of the participants complained about the adverse effect of having several lectures in a day. As noted by one the participants, *"by the time you are getting to the fourth lecture you become bored and hardly gain anything"*. Such a state of affairs necessitates the employment of various strategies that will allow for active participation of students rather than being passive receivers of knowledge –which is typical of

didactic lectures. Student engagement is essential for effective learning (Kilroy & Kumar, 2016). Based on learning theories (Taylor & Hamdy, 2013), the process of learning is multi-dimensional; therefore, there is a need to adopt different learning approaches to meet the need of the diversity of students in the class (McCoy, Pettit, Kellar & Morgan, (2018). With these strategies in place, students will readily take responsibility for their learning by directly engaging in activities in the classroom i.e. self-direct learning (Ramnanan & Pound, 2017).

5.2.4. Academic-Self Perceptions

The participants identified the small size of each class as one of the strengths of the learning environment created by the medical school. This, as they reported, allows for better student engagement, particularly during their clerkship.

Various learning approaches were being adopted by the students, ranging from superficial to deep approaches. As discussed by the participants, the choice and the dominance of an approach depended on the nature of the course or the subject. Predominantly, participants agreed that during the preclinical phase they are more orientated towards a superficial approach, and with some 'abstract' subjects like biochemistry; this approach may be adopted by nearly all the students. In the clinical phase, on the other hand, the deep approach toward learning was more dominant. This was attributed to several approaches and opportunities created for learners to learn. As voiced by the participants, in the clinical phase you have the opportunity to learn in the class, see and learn at the ward-round and at the clinics. On the whole, they agreed that they tend to have a more deep learning approach toward learning. This is in agreement with previous studies that show that medical students adopt a more varying approach to learning with the deep approach being the most dominant approach (Shankar et al., 2014; Shah et al., 2016; Chonkar et al., 2018). The learning environment determines the students' learning approaches by influencing students' intrinsic factors such as a desire to succeed, the relevance of the learning experience and extrinsic motivation such as teacher's interest in the subject and the assessment practice (Roff et al., 1997; Pimparyon et al., 2000; Hutchinson, 2003).

Based on students' experience in the pre-clinical phase, there may be a need for teachers in this phase of the learning environment to adopt more active teaching strategies that will ensure active student engagement in their learning rather than being a passive receiver of knowledge. Moreover, the learning engagement also has to be relevant to the envisaged future practice in order to gain students' interest.

Despite some of these challenges, participants believed in their capability to compete favourably well with other medical students, both of whom trained within or outside the country.

5.2.5. Students' expectation and the realities

Several features were highlighted by the participants as constituting their ideal medical learning environment. These ranged from physical, social to emotional components. As discussed, they expected their ideal medical learning environment to have basic facilities that aid students' comfort and enhance teaching and learning. They expect the teaching hospital to have basic equipment such as functional CT scanners, MRI equipment, and well-equipped laboratories made available for patients' care and for learning. The availability of electricity and a regular supply of water were also highlighted as basic things that should be present in their ideal learning environment (cf. 5.3.1).

Alongside these, participants expect their environment to have recreational facilities and opportunities to interact with other medical schools both locally and internationally. They believed that creating such opportunities as well as exchange programmes, will provide access to things they do not currently have at their institution, and that ultimately, these will enhance their learning opportunities. Students also felt that their learning environment should have a medical library with up to date books and access to the internet which they believe will provide them with up to date information.

Currently, there are challenges in getting the undergraduate medical programme accredited by the regulatory bodies and more importantly, by the Medical and Dental Council of Nigeria (MDCN). This has led to delays in the graduation dates, causing each class having to spend an additional 2 to 3 years at the University. In an ideal learning environment, students should know the date they will graduate upon entering the University so as to avoid any uncertainties about their future. The participants in this study believed that this knowledge will serve as motivation for them to learn and focus on their studies.

Financial aids and scholarships opportunities were also considered as important factors in their ideal medical learning environment. They believe such opportunities will allow students with financial challenges to face their challenges, rather than facing incessant embarrassment by school authorities as a result of their inability to pay school fees and other levies. Apart from financial aids, they expected an ideal medical learning environment to provide accessible medical care to students as well an opportunity for counselling for those in need of such services. These will provide the necessary support for students with various challenges.

Students perceived the learning environment created by the institution to be far from their expected ideal. When asked to rate how close the institution was to their expected ideal learning environment, all participants rated their learning environment between 20 and 60%, with all participants agreeing that on average, the institution met about 30-40% of their expected ideal learning environment criteria. This was attributed to the absence or inadequacy of those factors outlined above. Again, this shows that the learning environment as rated by participants is far from their ideal, and emphasises the need for the improvement of this learning environment so as to ensure the achievement of the set learning outcomes. The way students perceived the learning environment has been reported to affect the achievement of learning outcomes. Other studies exploring students' satisfaction with their medical education in a developing nation like Nigeria had reported different rates; 28% in Iran (Jalili, Mirzazadeh & Azarpira, 2008) and 43% in Pakistan (Manzar & Manzar, 2011).These findings generally call for continuous evaluation and improvement of the medical learning environment in order to ensure that teaching and learning engagement is maximized and that learning outcomes are achieved.

5.3. Envisaged contribution of the study

This study has identified some key strengths and challenges in the learning environment that can serve as foundation for future reforms and improvement. The findings of this study are going to be presented at the Ekiti State University College of medicine Research week. This will help the College understand students' perception of the learning environment and guide any future reform. In addition the findings will be published in a scholarly journal to ensure larger dissemination to the medical education community.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1. Introduction

The final chapter of this research assignment provides a number of conclusions based on the findings of this study. These conclusions were drawn in relation to the stated research question and the objectives of this study. As highlighted in the first chapter, this study was aimed at understanding the perception of the learning environment amongst medical students in their clinical years in a new medical school in Nigeria. In order to achieve this, three objectives were set; first, to understand the strengths and weaknesses of the learning environment, second, to identify the perceived challenges confronting teaching and learning in this medical school and finally to understand the students' perspectives of ideal medical school learning environment. Based on these, a number of factual conclusions were drawn and these are discussed below. The final part of the chapter discusses the implications of the study.

6.2 Conclusions

The findings of this study identified key strengths and weaknesses, as well as challenges confronting teaching and learning in the learning environment as perceived by the participants. One of the key strengths identified is the good student-teacher relationship that exists in this learning environment. Students felt strongly that this aspect facilitates good teaching and learning. The teacher-student ratio was also an important factor identified as the strength of the learning environment. According to the participants, this allowed for a close relationship with peers, registrars and their teachers, and better students' engagement in patients' care. Unlike other faculties in the University, the students agreed there are adequate classrooms, laboratories, and students' hostels which to some extent provide some comfort for teaching and learning, though there is room for improvement.

Despite the strengths highlighted above, there were obvious weaknesses and challenges identified in the learning environment. Of these, irregular supply of electricity was identified as a major challenge to teaching and learning as well as students' personal life. The effects of this included inability to use audio-visual teaching and learning aids, impaired laboratory activities, and the inability of students to use their personal computers and to access other learning activities

Inadequate teaching aids and essential hospital equipment to facilitate teaching and learning were also identified as a major challenge and weakness of the learning environment. Likewise, the absence of

opportunities for financial aids and scholarship were also raised as a challenge to effective learning in this learning environment. Such an opportunity, as noted by the students, would assist students with financial constraints which in turn, would help them to focus on their studies, rather than having to endure repeated disturbance from the school authority as a result thereof.

Although it was majorly agreed that teaching and learning in the institution were student-centred, participants still noted that the pre-clinical wing (which serves as the foundation for medical education) was more of teacher-centred, and students often lose interest in teaching activities as the day progresses. This highlighted the need for teachers to be equipped with active teaching methodologies that will demand and improve student engagement and ensure achievement of learning outcomes.

Overall, the participants rated their learning environment to be 30-40% of their expected ideal learning environment. This means that the learning environment provided by this new medical school is far from ideal. This assertion was based on the challenges highlighted above; from physical, social, and the inadequacy and ineffectiveness of other identified promoters of learning.

6.3. Implications of the study

As noted by Bassaw et al (2003) and Genn (2001), the learning environment is one of the most important factors in determining the success of any medical curriculum and forms the basis for effective teaching and learning. It determines the extent to which learning objectives are achieved. The conclusions drawn on the findings of this study highlighted a number of implications to medical education managers and other role players for the way students perceive their learning environment. Owing to the nature of the study, the findings from this study may be difficult to generalize; however, possible implications for other settings were pointed out.

The study identified some strengths and weaknesses of the learning environment that can form the basis for improving this learning environment and other similar settings.

The high teacher-student's ratio was identified as a promoter of teaching and learning particularly during their clerkship. This can also be improved upon, and serve as the basis for active engagement during other teaching and learning activities. The good student-teacher relationship is another important strength that can be improved upon to foster learning, and opens up avenues for teaching the hidden curriculum i.e. skills or messages that are communicated without being explicitly taught.

Some challenges were identified by the participants. Of note is the inadequate teaching aids and equipment in the teaching hospital which they believe encourages superficial learning. The availability of and accessibility to basic teaching aids and equipment are paramount to fostering deep learning. This can be achieved through efficient clinical skills laboratories, and an opportunity to demonstrate diverse procedures.

The issue of inadequate supply of electricity was also raised as a major challenge hampering teaching and learning. In this modern day when most of teaching and learning activities are power-driven, effort should be made to ensure an adequate supply of electricity for education. Public resources can be supplemented by solar energy or other sources of energy. This will increase the duration of the study and other learning engagement.

Opportunities for recreational activities was also seen by students as an important component of an ideal medical learning environment. This may provide an opportunity for relaxation as well an opportunity to implement some co-curriculum aspects and help in achieving the overall learning goals. Similarly, financial support and scholarship opportunities were seen as essentials in an ideal medical learning environment and therefore, students should be provided with links to local and national scholarship opportunities.

Suggestion for future study

The learning environment remains an important factor in promoting effective teaching and learning in undergraduate medical education. Therefore, there is need for on-going research on how students perceive their learning environment. This will help medical education managers to understand what the challenges are, and what can be done in improving the learning environment in order to achieve their set objectives. In this study, there are key issues that were raised by the students that need further research. One example is the way students perceived being bullied by their teachers, and teachers' opinion about bullying their students or using abusive words on their students. Findings from this study also call for the need to explore current teaching practices in the pre-clinical phase and how it can be improved. Similarly, understanding the co-curriculum and current activities in this regard and what can be done to improve the situation will also provide an opportunity for improving the learning environment in this medical school.

The findings of this study have identified the strengths and some of the challenges of this learning environment. These findings will empower the educational managers to make appropriate adjustments where needed, thus ensuring that better learning outcomes are achieved.

REFERENCES

Abante, M. E. R., Almendral, B. C., Manansala, J. E., & Mañibo, J. (2014). Learning Styles and Factors Affecting the Learning of General Engineering Students, 3 (1). https://doi.org/10.6007/IJARPED/v3-i1/500.

Abdulghani, H. M., Al-Drees, A. A., Khalil, M. S., Ahmad, F., Ponnamperuma, G. G., & Amin, Z. (2014). What Factors Determine Academic Achievement in High Achieving Undergraduate Medical Students? A Qualitative Study. Med Teach; 36, S43-S48.

Abdulrahman, K. A. B. (2007), Students' Views on Student-Teacher Relationship: A Questionnaire-Based Study. J Family & Community Med, 2007; 14 (2): 81-87.

Abraham, R., Ramnarayan, K., Vinod, P., Torke, S. (2008). Students' perceptions of the learning environment in an Indian medical school. BMC Med Educ 8:20.

Abucay, A.R. (2009). Factors that may affect the Learning process. Retrieved October 16, 2017, retrieved from http://www.infosforyouandme.com/2009/04/ factors-that-may-affect-learning.html

Aghamolaei, T. & Fazel, I. (2010). Medical students' perceptions of the educational environment at an Iranian Medical Sciences University. BMC Med Edu; 10:87. http//www.biomedcentral.com/1472-6920/10/87.

Al-Ayed, I. H., Sheik, S.A. (2008). Assessment of the educational environment at the College of Medicine of King Saud University, Riyadh. Eastern Mediterranean Health J; 14(4):953–959.

Al-Hazimi, A., Al-Hyiani, A.& Roff, S. (2004). Perceptions of the educational environment of the medical school in King Abdul Aziz University, Saudia Arabia. Med Teach; 26(6):570–573.

Al-Qahtani, F. (2015). Associations between approaches to study, the learning environment, and academic achievement Mona Associations between approaches to study, the learning environment, and academic achievement. J. Taibah Univ Med Sci; 10(1), 56e65.

American Medical Association (AMA), (2008). Strategies for transforming the medical education learning environment. American Medical Association, Initiative to Transform Medical Education. December

2008. Accessed October 21, 2017, from https://afmc.ca/pdf/AMA-Initiative-to-Transform-Medical-Education.pdf

Anyaehie, U. S., Nwobodo, E., Oze, G., Nwaggha UI, Orizu, I., Okeke T., Anyanwu, G.E. (2011). Medical students' evaluation of the physiology learning environment in two Nigeria Medical schools. Adv Physiol Education; 35(2): 146-8.

Artino, A. R., Dong, T., DeZee, K., J. et al. (2012). Achievement goal structures and self-regulated learning: Relationships and changes in the medical school. Acad Med; 87:1375–1381.

Atapattu, N. S. B., Kumari, K. E. I. U., Pushpakumara, K. K. A., and Mudalige, S.K.K. (2015). Adoption of Dundee DREEM Questionnaire to assess the Educational Environment of an Agriculture Degree Programme. Tropical Agricultural Research & Extension; 18 (1): 22-30.

Atkinson, P.A., Martin, C. R., Rankin, J. (2009). Resilience revisited. J Psychiatr Ment Health Nurs; 16(2):137–45.

Avalos, G., Freeman, C., Dunne, F. (2007). Determining the quality of the medical educational environment at an Irish medical school using the DREEM inventory. Irish Med J; 100:522–525.

Bandura, A. (1999). Social Cognitive theory: An agentic perspective. Asian Journal of Social Psychology. 2: 21-41.

Bassaw, B., Roff, S, McAleer, S., Roopnarinesing, S., Lisle, J. D., Teelucksing, S., Gopaul, S. (2003). Students' perspectives on the educational environment, Faculty of Medical Sciences, Trinidad. Med Teach; 25:522-526.

Belaineh, M. S. (2017). Students' conception of learning environment and their approach to learning and its implication on quality education. Educ. Res. Rev; 10: 695-704.

Berryman, E, (2015). Bullying culture: Valuing the teacher-student relationship. NZMJ; 128 (142): 13-17.

Bhattacharjee, J. (2015). Constructivist Approach to Learning–An Effective Approach of Teaching Learning. International Research Journal of Interdisciplinary & Multidisciplinary Studies, I (4); 65-74.

Bouhaimed, M., Thalib, L.& Doi, S. A. R. (2009). Perception of the Educational Environment by Medical Students Undergoing a Curricular Transition in Kuwait. Med Princ Pract; 18:204–208.

Boysen-Osborn, M., Anderson, C., Navarro, R., Yanuck. J., McCoy, C., Youm, J., Ypma-Wong, M. F., Langdorf, M. I. (2016). Flipping the advanced cardiac life support classroom with team-based learning: comparison of cognitive testing performance for medical students at the University of California, Irvine, United States. J Educ Eval Health. http://dx.doi.org/10.3352/jeehp.2016.13.11.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77-101.

Brazeau, C. M., Schroeder, R., Rovi, S. & Boyd, L. (2010). Relationships between medical student burnout, empathy, and professionalism climate. Academic Medicine; 85: 10 Suppl: S33–6.

Buhari, M. A., Nwannadi, I. A., Oghagbon, E. K. & Bello, J. M (2014). Students' perceptions of their learning environment at the College of Medicine, University of Ilorin, Southwest, Nigeria. West African Journal of Medicine; 33(2):141-145.

Carmody, D., F., Jacques A., Denz-Penhey, H., Puddey, I., Newham, J, P. (2009). Perceptions by medical students of their educational environment for obstetrics and gynaecology in metropolitan and rural teaching sites. Med Teach; 31: e596–e602.

Cassar, K. (2004). Development of an instrument to measure the surgical operating theatre learning environment as perceived by basic surgical trainees. Med Teach; 26(3): 260-264.

Chonkar, S. P., Ha, T., Chu, S. S. H., Xinhui, A. S., Lim, M. L. S., Xin, T. Z. X., Jack, M. & Tan K. H. (2018). The predominant learning approaches of medical students. BMC Med Educ; 18:17. doi 10.1186/s12909-018-1122-5.

Cleland, J., A. (2017). The qualitative orientation in medical education research. Korean J Med Educ; 29(2): 61-71.

Cruess, R. L., Cruess, S. R., Boudreau, J. D., Snell, L., Steinert, Y. (2014). Reframing medical education to support professional identity formation. Acad Med; 89: 1446–1451.

Cuncic, C., Regehr, G., Frost, H. & Bates, J. (2018). It's all about relationships: A qualitative study of family physicians' teaching experiences in rural longitudinal clerkships. Perspect Med Educ; 7(2): 100–109.

Dagnone, J. D., McGraw, R., Howes, D., Messenger, D., Bruder, E., Hall, A et al. (2016). How we developed a comprehensive resuscitation-based simulation curriculum in emergency medicine. Med Teach; 38:30–35.

Dahlin, M., Fjell, J., & Runeson, B. (2010). Factors at Medical School and Work Related to Exhaustion among Physicians in Their First Postgraduate Year. Nord J Psychiatry; 64, 402-408.

de Oliveira Filho, G. R. & Schonhorst, L. (2005). Problem-based learning implementation in an intensive course of anaesthesiology: a preliminary report on residents' cognitive residents' cognitive performance and perceptions of the educational environment. Med Teach; 27:382–384.

de Oliveira Filho, G. R.& Vieira, J. E. (2007). The relationship of learning environment, quality of life, and study strategies measures to Anaesthesiology resident academic performance. Anesth Analg; 104:1467–1472.

Denz-Penhey, H & Murdoch, J. C. (2009). A comparison between findings from the DREEM questionnaire and that from qualitative interviews, Med Teach, 31:10, e449-e453.

Donnon, T., Paolucci, E. O, Violato, C. (2007). The predictive validity of the MCAT for medical school performance and medical board licensing examinations: A meta-analysis of the published research. Acad Med; 82:100–106.

Dunne, F. S., McAleer, S. & Roff, S. (2006). Assessment of the undergraduate medical education environment in a large UK medical school. Health Educ J; 65 (2):149–158.

Dunham, L., Dekhtyar, M., Gruener, G., CichoskiKelly, E., Deitz, J., Elliott, D., Stuber, M. L. & Skochelak, S. E. (2017). Medical Student Perceptions of the Learning Environment in Medical School Change as Students Transition to Clinical Training in Undergraduate Medical School. Teach Learn Med; 29(4):383-391.

Dyrbye, L.N., Thomas, M. R., Harper, W., Massie, F.S., Power, D.V., Eacker, A. et al. (2009). The learning environment and medical student burnout: a multicentre study. Med Educ; 43(3):274-82.

Edgren, G., Haffling, A., Jakobsson, U., McAleer, S., Danielsen, N. (2010). Comparing the educational envir.onment (as measured by DREEM) at two different stages of curriculum reform. Med Teach; 32:e233–e238.

Ericsson, K. A. (2004). Deliberate practice and the acquisition and maintenance of expert performance in medicine and related domains. Acad Med; 79 (10 Suppl): S70-S81.

Entwistle, N. & Tait, H. (1995). Approaches to studying and perceptions of the learning environment across disciplines. New Directions for Teaching and Learning: 93–103. doi:10.1002/tl.37219956413.

Felder, R., & Brent, R. (2005). Understanding student differences. J. Eng. Educ; 94(1), 57-72.

Ferguson, K. J., Wolter EM, Yarbrough, D. B., Carline, J. D & Krupat, E. (2009). Defining and describing medical learning communities: results of a national survey. Acad Med; 84(11):1549-56.

Frambach, J.M., van der Vleuten, C.P. & During, S.J. (2013). Quality criteria in qualitative and quantitative research. Acad Med; 88(4):552.

Fry H., Ketteridge, S. & Marshall, S. (2013). Understanding student learning. In A Handbook for Teaching and Learning in Higher Education. Enhancing academic practice. Published by Routledge, 270 Madison Ave, New York, NY 10016.

Gagne, R. M., Briggs, L. J & Wagner, W. W. (1992). Principles of instructional design. Orlando, FL: Harcourt Brace.

General Medical Council, (2013). Regulating doctors ensuring good practice. Accesses 20 Oct, 2017 at http://www.gmc-uk.org/Educational_Environments May_2013.pdf_52096709.pdf.

Genn, J. M. (2001). AMEE Medical Education Guide No 23 (part 1): Curriculum, environment, climate, quality and change in medical education - A unifying perspective. Med Teach; 23:337-44.

Haglund, M. E., aanhet Rot, M., Cooper, N., S. et al., (2009). Resilience in the third year of medical school: A prospective study of the associations between stressful events occurring during clinical rotations and student well-being. Acad Med; 84:258–268.

Haidet, P., & Stein, H. F. (2006). The role of the student-teacher relationship in the formation of physicians. The hidden curriculum as process. J Gen Intern Med. 2006; 21 (suppl 1):S16–S20.

Hegenbarth, M., Rawe, S., Murray, L. & Arnaert, A. (2015). Establishing and maintaining the clinical learning environment for nursing students: a qualitative study. Nurse Educ Today; 35(2):304–9.

Hirsh, D, Gaufberg E, Ogur B, et al. (2012). Educational outcomes of the Harvard Medical School–Cambridge integrated clerkship: A way forward for medical education. Acad Med; 87:643–650.

Hoskins, S. L. & Newstead S., E. (2013). Encouraging students' motivation. In A Handbook for Teaching and Learning in Higher Education. Enhancing academic practice. Published by Routledge, 270 Madison Ave, New York, NY 10016.

Howe, A., Smajdor, A. & Stockl, A. (2012). Towards an understanding of resilience and its relevance to medical training. Med Educ; 46(4):349–56.

Hutchinson, L. (2003). ABC of teaching and learning educational environment. BMJ; 326: 810

Idon, P. I., Suleiman, I. K. & Olasoji, H. O. (2015) Students' Perceptions of the Educational Environment in a New Dental School in Northern Nigeria. Journal of Education and Practice; 6(8): 139-147.

Isba, R., & Boor, K., (2018). Creating a learning environment. In Medical Education: Theory and practice. Edited by Tim D, Karen M, and Albert S. Great Britain: Churchill Livingstone.

Issenberg, S. B. & McGaghie, W. C. (2002). Clinical skills training — practice makes perfect. Med Educ; 36: 210-211.

Irby, D. M., Cooke, M. & O'Brien, B. C. (2010). Calls for reform of medical education by the Carnegie Foundation for the Advancement of Teaching: 1910 and 2010. Acad Med; 85:220–227.

Jalili, M., Mirzazadeh, A., Azarpira, A. (2008). A survey of medical students'perceptions of the quality of their medical education upon graduation. Ann Acad Med; 37:1012-8.

Jamaiah, I. (2008). Review of research in learning environment. JUNMEC; 11 (1): 7–11.

Jamieson, J., Mitchell, R., Le Fevre, J. & Perry, A. (2015). Bullying and harassment of trainees: An unspoken emergency? Emerg. Med. Australas; 27(5):464-7.

Kaufman, D. M. & Mann, K.V. 2010. Teaching and learning in medical education: How theory can inform practice. In T. Swanwick (ed.). Understanding medical education: Evidence, theory and practice. Chichester: Wiley, 7–29.

Kilroy, D. & Kumar, A. H. S (2016). Student-led collaborative learning enhances engagement in veterinary neurophysiology lectures. BEMS Reports; 2(2):51-54.

Knowles, M. S., Holton, E. F & Swanson, R. A. (2005).The adult learner (6 ed). London: Elsevier.

Kolb, D. (1984). Experiential learning. Englewood Cliffs, NJ: Prentice-Hall.

Kiessling, C., Schubert, B., Scheffner, D. & Burger, W. (2004). First Year Medical Students' Perceptions of Stress and Support: A Comparison between Reformed and Traditional Track Curricula. Med Educ; 38, 504-509.

Krueger, R., Casey, M. A, (2009). Focus groups: a practical guide for applied research. London: Sage Publications.

Krueger, R., A, (1998). Developing questions for focus groups. London: Sage Publications; 1998.

Kvale, S., Brinkmann, S, (2009). Interviews learning the craft of qualitative research interviewing. 2nd ed. Los Angeles, CA: Sage

Lachman, S. J, (1997). Learning is a Process: Toward an Improved Definition of Learning. The Journal of Psychology; 131(5): 55-58.

Lai, N. M., Nalliah, S., Jutti, R. C., Hla, Y. Y., Lim, V.K.E. (2009). The educational environment and self-perceived clinical competence of senior medical students in a Malaysian medical school. Educ Health; 22(2):1–15.

Lancaster, C. J, Bradley, E., Smith, I. K., Chessman, A., Stroup-Benham, C. A., Camp, M. G. (1997). The effect of PBL on students' perceptions of learning environment. Acad Med; 72: S10–S12.

Latif, A., Choudhary, A. I. & Hammayun, A. A. (2015). Economic Effects of Student Dropouts: A Comparative Study. J Glob Econ 3: 137.

Lave, J & Wenger, E. (1991). Situated learning: Legitmate Peripheral Participation. Cambridge. Cambridge University Press. Pp. 33, 40.

Lizzio, A., Wilson, K., Simons, R. (2002). University students' perceptions of the learning environment and academic outcomes: Implications for theory and practice. Stud Higher Educ; 27:27–52.

Lieberman SA, Stroup-Benham CA, Peel JL, et al. (1997). Medical student perception of the academic environment: a prospective comparison of traditional and problem-based curricula. Acad Med; 72:13–15.

Liljedah, l. M., Engqvist, B. L., Porthén, F. C. & Bolander, L.K. (2014). What students really learn: contrasting medical and nursing students' experiences of the clinical learning environment? Adv Health Sci Educ Theory Pract.; doi10.1007/s10459-014-9564.

Litmanen, T., Loyens, S. M. M., Sjöblom, K. & Lonka, K. (2014). Medical Students' Perceptions of their Learning Environment, Well-Being and Academic Self-Concept. Creative Education; 5, 1856-1868.

Mann, K.V. (2011). Theoretical perspectives in medical education: Past experience and future possibilities. Medical Education, 45(1):60–68.

Manzar, B., & Manzar, N. (2011). To determine the level of satisfaction among medical students of a public sector medical university regarding their academic activities. BMC Research Notes; 4:380. http://www.biomedcentral.com/1756-0500/4/380.

Marshall, R., E. (1978). Measuring the medical school learning environment. J Med Educ; 53:98–104.

Mayya, S., S. & Roff, S. (2004). Students' perceptions of educational environment: A comparison of academic achievers and under-achievers at Kasturba Medical College, India. Educ Health; 17(3):280–291.

McCoy, L., Pettit, R. K., Kellar, C. & Morgan C, (2018). Tracking Active Learning in the Medical School Curriculum: Learning-Centered Approach. J Med Educ Curric Dev; 22; 5:2382120518765135.

Meadows, L., M, Verdi, A., J, Crabtree, B., F (2003). Keeping up appearances using qualitative data to enhance knowledge of dental practice. J Dent Educ; 67(9):981-90.

Merriam, S. & Caffarella, R. (1999). Learning in Adulthood. San Francisco, CA: Jossey-Bass Inc.

Mezirow, J. (2000). Learning as Transformation: Critical Perspectives on a Theory in Progress. San Francisco: Jossey Bass

Miles, S., Swift, L & Leinster, S., J. (2012). The Dundee Ready Education Environment Measure (DREEM): A review of its adoption and use. Med Teach; 34:9, e620-e634.

Moore-West, M., Harrington, D. L., Mennin, S. P., Kaufman, A., Skipper, B. J. (1989).Distress and attitudes toward the learning environment: Effects of a curriculum innovation. Teach Learn Med; 1:151–157.

Nair, D. S., Bedekar, M. Y., Agrawal, M. J., Guptee, A. M. (2017). Effectiveness of teaching Aids in Medical Education. Annal of applied bio-sciences; 14(1): 58-61.

Ogun, O. A., Nottidge, T.E. & Roff, S. (2018). Students' perceptions of the learning environment in two Nigerian medical schools offering different curricula. Ghana Med J; 52(3): 116-121.

Okoye, O., Ezisi, C., N. & Ezepue, F., U. (2017). Evaluation of the learning and teaching environment of the Faculty of Medical Sciences, College of Medicine, University of Nigeria, Enugu Campus. Niger J Clin Pract; 20:958-63.

Palmgren, P., J. & Laksov, K., B. (2015). Exploring chiropractic students' experiences of the educational environment in healthcare professional training: a qualitative study. BMC Med Educ; 15:128.

Pimparyon, P., Roff, S., McAleer, S., Poonchai, B. & Pemba, S. (2000). Educational environment, students' approaches to learning and academic achievement in a Thai nursing school. Med Teach: 22(4):359–364.

Portoghese, I., Galletta, M., Coppola R.C., Finco, G., Campagna, M. (2014). Burnout and Workload Among Health Care Workers: The Moderating Role of Job Control. Safety and Health at Work; 5: 152e157.

Ramnanan, C. J., Pound, L. D, (2017). Student perceptions of the flipped classroom**;** Adv. Med. Educ. Pract; 8**:** 63—73

Roff, S., McAleer, S., Harden, R. M., Al-Qahtani, M., Ahmed, A. U., Deza, H., et al. (1997). Development and validation of the Dundee ready education environment measure (DREEM). Med Teach; 19(4), 295-299.

Roff, S., McAleer, S., Ifere, O., S. & Bhattacharya, S. (2001). A global diagnostic tool for measuring educational environment: Comparing Nigeria and Nepal. Med Teach; 23 (4):378–382.

Roff, S., McAleer, S. & Skinner, A. (2005). Development and validation of an instrument to measure the postgraduate clinical learning and teaching educational environment for hospital-based junior doctors in the UK. Med Teach; 27:326-31.

Qin Y., Wang Y., Floden R. E. (2016). The Effect of Problem-Based Learning on Improvement of the Medical Educational Environment: A Systematic Review and Meta-Analysis. Med Princ Pract; 25:525-532.

Sajid, F., Rehman, A. & Fatima S. (2013). Perceptions of Students of The Learning Environment Studying an Integrated Medical Curriculum. J Surg Pak; 18 (2): 86-91.

Salanova, M., Schaufeli, W., Martínez, I., & Bresó, E. (2010). How Obstacles and Facilitators Predict Academic Performance: The Mediating Role of Study Burnout and Engagement. Anxiety, Stress & Coping, 23, 53-70.

Seabrook, M., A. (2004). Clinical students' initial reports of the educational climate in a single medical school. Med Educ; 38:659–669.

Shankar, P. R., Balasubramanium, R., Dwivedi, N. R. (2014), Approach to learning of medical students in a Caribbean medical school. Educ Med J; 6: 33–40.

Shah, D. K., Yadav, R. L., Sharma, D., Yadav, P. K., Sapkota, N. K., Jha, R. K., Islam, M. N.(2016). Learning approach among health sciences students in a medical college in Nepal: a cross-sectional study. Adv Med Educ Pract. 2016; 7:137–43.

Shawwa, L. A. I., Abulaban, A. A., Abulaban, A. A., Merdad, A., Baghlaf, S., Algethami, A., Abu-shanab, A., Balkhoyor, A. (2015). Factors potentially influencing academic performance among medical students. Adv Med Educ Pract; 6: 65–75.

Shochet, R. B., Colbert-Getz, J. M., & Wright, S. M. (2015). The Johns Hopkins Learning Environment Scale: Measuring Medical Students' Perceptions of the Processes Supporting Professional Formation Research. Acad Med; 90: 810-818.

Skinner, D. (2014). Qualitative research methodology: An introduction. In Ehrlich, R. & Joubert, G. (Ed.), Epidemiology: A research manual for South Africa (3rd ed., pp. 349-359) Oxford University Press.

Smith, J. P., & Naylor, R. A. (2001). Dropping out of university: A statistical analysis of the probability of withdrawal for UK university students. J R Stat Soc; 164 (2): 389-405.

Snadden, D. (2006). Clinical education: context is everything. Med Educ; 40(2):97–8.

Soemantri, D., Herrera, C., Riquelme, A. (2010). Measuring the educational environment in health professions studies: A systematic review. Med Teach; 32:947–952.

Strand, P., Sjöborg, K., Stalmeijer, R, Wichmann-Hansen, G., Jakobsson, U., Edgren, G. (2013). Development and psychometric evaluation of the Undergraduate Clinical Education Environment Measure. Med Teach; 35(12):1014–26.

Stalmeijer, R.E., Mcnaughton, N. & van Mook, W.N. (2014). Using focus groups in medical education research. AMEE Guide No 91. Med Teach; 36(11):923-939.

Swanwick, T. (2011). Understanding medical education: Evidence, theory and practice. Chichester: Wiley

Taylor, D.C. M & Hamdy, H. (2013). Adult learning theories: Implications for learning and teaching in medical education: AMEE Guide No. 83, Med Teach; 35: 11, e1561-e1572.

Tempski, P., Santos, I. S., Mayer, F. B., Enns, S., C., Perotta, B., Paro, H. B. M., Peleias, M., Garcia, V. L. et al. (2015). Relationship among Medical Student Resilience, Educational Environment, and Quality of Life. PLoS One.; 10(6): e0131535.

Torre, D. & Durning, S.J. (2015). Social cognitive theory: Thinking and learning in social settings. Researching Medical Education; 10: 105-116.

Tyssen, R., Vaglum, P., Grønvol, N. T., & Ekeberg, Ø. (2005). The Relative Importance of Individual and Organizational Factors for the Prevention of Job Stress during Internship: A Nationwide and Prospective Study. Med Teach; 27: 726-731.

United Nations Department of Economic and Social Affairs (2014). Electricity and education: The benefits, barriers, and recommendations for achieving the electrification of primary and secondary schools.https://sustainabledevelopment.un.org/content/documents/1608Electricity%20and%20Education.pdf Accessed, September, 19TH 2018

Walsh, K. (2013). Oxford textbook of medical education. Oxford: Oxford University Press.

Watzlawick, P. B., Bavelas, J. B., Jackson, D. D. (2011). Pragmatics of Human Communication: A Study of Interactional Patterns, Pathologies and Paradoxes. New York, NY: Norton.

Wayne, S. J, Fortne, S. A., Judith, A., Craig, K. T., & Kalishman S. (2013). Cause or effect? The relationship between student perception of the medical school learning environment and academic performance on USMLE Step 1. Med Teach; 35: 376–380.

Wearn, A., Wilson, H., Hawken, S. J., Child, S., Mitchell, C. J. (2010). In search of professionalism: implications for medical education. NZ Med J; 123(1314):123-32.

Woolner, P., & Hall, E. (2010). Noise in Schools: A Holistic Approach to the Issue. Int J Environ Res Public Health; 7(8): 3255–3269.

Wu, H. & Volker, D. L. (2009). The use of theory in qualitative approaches to research: application in end-of-life studies. J Adv Nurs. 65(12; 2719-2732.

Yang, L. L., Li, Y., Yuan, L. J. et al (2010). Quantitative analysis of adaptation to educational environment among seven-year program medical students. China Higher Med Educ; 1:18–19

Youssef, W. T., Wazir, Y. M. E., Ghaly, M. S., Khadragy, R, A. E. (2013). Evaluation of the Learning Environment at the Faculty of Medicine, Suez Canal University: Students' Perceptions. Intel Prop Rights 1: 102. doi:10.4172/2375-4516.1000102.

Yusoff, M. S.B. & Arifin, W. W. (2015). Educational environment and psychological distress of medical students: The role of a deep learning approach. J Taibah Univ Sci; 10(4): 411-418.

Zawawi, A. H. & Elzubeir, M. (2012). Using DREEM to compare graduating students' perceptions of learning environments at medical schools adopting contrasting educational strategies. Med Teach; 34: S25–S31.

ADDENDA

Addendum-A

INTERVIEW GUIDE

1. What do you understand by the learning or educational environment?
   - What do you think constitutes the physical, emotional or social environment?
   - Are there adequate and conducive infrastructures? (classroom, seminar room, library, laboratories)
2. How does the learning environment impact on teaching and learning in this medical school?
   - Are there positive or negative effects or consequences of the learning environment on learning in this medical school?
   - In your own opinion will you say teaching and learning in this school is stimulating or otherwise?
   - Will you say it is student-centerd or teacher-centred?
   - And to what extent does the learning environment help you to develop the competence you need to practice as a doctor?
3. What are your expectations of an ideal medical school learning environment?
   - How far are these expectations being met in this school?
   - Are you always feeling confident of passing exams?
   - Will you say oftentimes you are well prepared for your exams?
   - Do you memorize things or take time to understand them?
4. How will you describe the relationship between students and the lecturers, registrars and other members of staff?

Addendum B

Consent form

UNIVERSITEIT•STELLENBOSCH•UNIVERSITY
jou kennisvennoot • your knowledge partner

CONSENT TO PARTICIPATE IN RESEARCH

You are invited to take part in a study conducted by Dr. Adetunji Obadeji, a Masters student at the Centre for Health Professions Education, Faculty of Medicine and Health Sciences at Stellenbosch University. I'm conducting a study with the title "Perception of the learning environment by medical students in a new medical school in Nigeria" You are approached as a possible participant because the study is aimed at evaluating medical students' perception of their learning environment. By participating in this study, you will be entitled to a travel reimbursement of 500 Naira and refreshment on the day of interview.

PURPOSE OF THE STUDY

The study is aimed at assessing the perception of the learning environment by medical students of the Ekiti State University. This will provide us with the opportunity to identify the strengths and weakness of the learning environment of this new medical school, and possibly recommend ways in which the learning environment can be improved.

WHAT WILL BE ASKED OF ME?

If you agree to take part in this study, you will be asked for some basic information about yourself and your perception of your learning environment in this medical school in a focus group discussion. This may take about 75-90minutes of your time.

POSSIBLE RISKS AND DISCOMFORTS

Participation in this study is not going to constitute any risk nor give any discomfort.

POSSIBLE BENEFITS TO PARTICIPANTS AND/OR TO THE SOCIETY

Outcome of this research is not going to have any direct benefit to the participants; nevertheless, data from this study is going to give us understanding into how students perceive their learning environment, the strength as well as weakness. This in turn can be used to improve teaching and learning in this institution and other similar settings.

PROTECTION OF YOUR INFORMATION, CONFIDENTIALITY AND IDENTITY

Any information you share with me during this study and that could possibly identify you as a participant will be protected. This will be done by ensuring confidentiality and/or anonymity. No one else apart from the main researcher will have access to the raw data. As a participant you can opt-out your information from being shared. The information collected for this study will be used for future publications.

You can choose whether to be in this study or not. If you agree to, kindly complete the information below:

I, the undersigned, confirm that (please tick box as appropriate):

1.	I have read and understood the information about the project, as provided in the Information Sheet dated _____.	☐
2.	I have been given the opportunity to ask questions about the project and my participation.	☐
3.	I voluntarily agree to participate in the project.	☐
4.	I understand I can withdraw at any time without giving reasons and that I will not be penalised for withdrawing nor will I be questioned on why I have withdrawn.	☐
5.	The procedures regarding confidentiality have been clearly explained (e.g. use of names, pseudonyms, anonymisation of data, etc.) to me.	☐
6.	The use of the data in research, publications, sharing and archiving has been explained to me.	☐

7.	I understand that other researchers will have access to this data only if they agree to preserve the confidentiality of the data and if they agree to the terms I have specified in this form.	☐
8.	I understand that as long as anonymity is maintained, what I have said or written as part of this study can be used in reports, publications and other research outputs	☐
10.	I, along with the Researcher, agree to sign and date this informed consent form.	☐

Participant:

_____ _____ _____

Name of Participant Signature Date